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AN INTERNATIONAL INSTITUTION



**An
International
Institution**



AN INTERNATIONAL INSTITUTION



PIONEERING
PROGRESS

1886
1922

PLANT
PRODUCTION



— while close at hand the rippling brook
that fills with music each sylvan nook ;
and deep within its pools, the trout
add to the charms of hereabout —
near Stroudsburg.

TO THOSE INTIMATELY ACQUAINTED
WITH US, THIS BOOK IS PRESENTED
AS A SOUVENIR OF BUSINESS RELATIONS
LONG AND SATISFACTORILY CONDUCTED.

LARGELY IN THEIR INTERESTS AND SERVICE HAVE BEEN
DEVELOPED OUR TRAINED ORGANIZATION AND THE COMPLETE
AND MODERN PLANT DESCRIBED HEREIN.

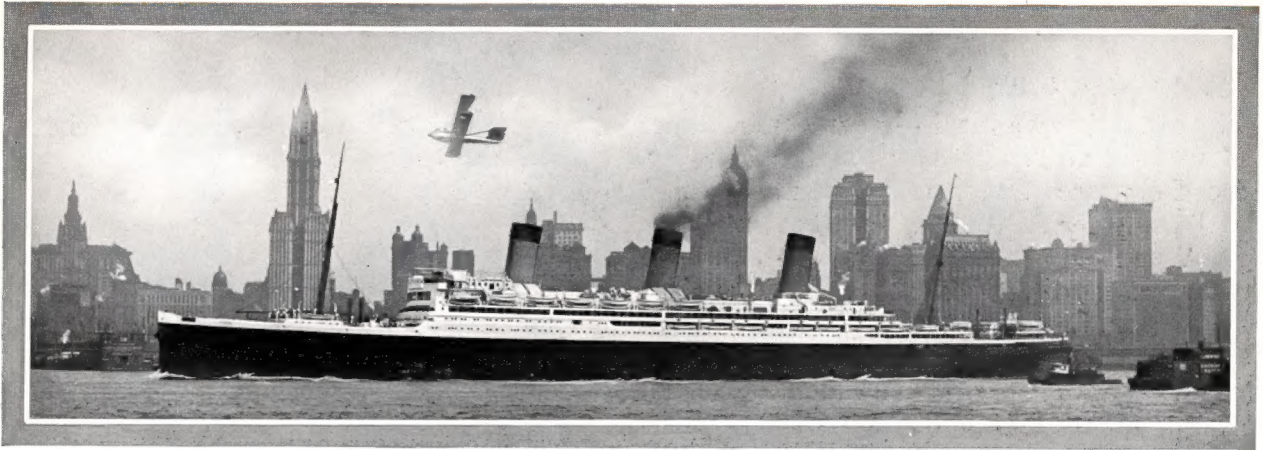
TO THEM, THE INTERNATIONAL BOILER, WE FEEL,
NEEDS NO INTRODUCTION SINCE ITS STERLING WORTH
HAS BEEN DEMONSTRATED THROUGH MANY YEARS OF
CONSTANT USAGE.

TO THOSE NOT INTIMATELY ACQUAINTED, WE OFFER
THIS BOOK AS A SOURCE OF INFORMATION. WITH
MORE THAN A QUARTER OF A CENTURY'S EXPERIENCE
IN MEETING THE EXACTING REQUIREMENTS OF THE
LARGEST INDUSTRIAL CORPORATIONS—IN BOTH THE
UNITED STATES AND FOREIGN COUNTRIES—THE INTERNATIONAL
BOILER IS A PRODUCT WITHOUT A PEER.

THROUGHOUT ALL THESE YEARS, IT HAS BEEN MADE
WITH JUST ONE IDEAL IN MIND—THAT OF SUPERIOR
MERIT IN DESIGN, MATERIALS AND CONSTRUCTION—
WHICH IDEAL WE SHALL PERPETUATE WITH OUR
UTMOST EFFORTS.

THE INTERNATIONAL BOILER WORKS
COMPANY

EAST STROUDSBURG, PA., U. S. A.



ROLLING away from New York on the royal Lackawanna Limited, the silhouette of Lower Manhattan's famous sky-line rapidly recedes and soon you arrive in Newark, great industrial centre of New Jersey.

From there, the Limited smoothly speeds through the Oranges, Maplewood, Summit and other beautiful Jersey towns and quickly reaches that superb section, the Foot Hills, where the scenery reflects Nature's ever-changing charms.

Passing Lake Hopatcong—enchanting inland resort—the train curves and climbs toward the Cut-Off, the Lackawanna's engineering triumph.

It is a panorama of delightful surprises. Here, undulating lowlands, beautiful homesteads, churches, country clubs and fine estates; there, a range of hills, valleys and woodland all tinted with every imaginable color. Suddenly, you enter a rocky gorge walled high with blue limestone—a miniature, as it were, of the celebrated Colorado Canyon.

Approaching Blairstown, of academic fame, the eye delights in lofty mountains, wooded slopes, sweeping valleys, crystal streams, fields rich in produce and pasture lands with grazing sheep and cattle enlivening the

scene. Now a railroad track threads into dim distance, motor cars flash along splendid, smooth roads, the blue sky topping all with billowy banks of hazy, lazy clouds floating by—a picture of whose charms mere words fail.

Down through another rock-walled gorge and the Limited rolls majestically over an artistically arched concrete bridge, hundreds of feet long, spanning the swift running river. In the near distance, is the fir covered promontory of the mysterious, fascinating Delaware Water Gap.

A turn to the right and upon you bursts the full magnificence and grandeur of the entrancing vista through the Gap. On one side, to a sheer height of fifteen hundred feet, tower mountains of solid rock, forest-crowned in glorious greens and browns. Opposite, rise sloping mountains, rugged and wild and picturesque, flanking beautiful roads, trim cottages and numerous summer hotels.

Romantic in the days of the roaming Red Man, Time has left them silent sentinels o'er the summer playground of thousands who make the Gap their Mecca. Down, deep between winds the river. Now it ripples rhythmically, then suddenly swirls into angry, dangerous rapids, then verges into a smooth, silvery calm. Flashing, foaming, murmuring, whirling, it wends its way through the verdant valley.

THE INTERNATIONAL BOILER WORKS Co.



The scene is awe-inspiring, grand, sublime. Nature, in all her splendor, has lavished on the Delaware Water Gap charms boasted neither by the Alps nor by our own wonderful West. No wonder visitors return year after year; no wonder it indelibly impresses eye and mind—captivates and enthralls you.

At the station, hundreds of tourists disperse to the many hotels and cottages offering hospitality amidst the beauties and pleasures of this superb vacation land. But you are interrupted by the call "Next stop is East Stroudsburg." East Stroudsburg and Stroudsburg, and the Delaware Water Gap; one recalls the other, so intimately are they related by history—association—sentiment.

The Stroudsburgs! names to conjure with. The fairest cities of fair Monroe County, they seem to cast a bewitching spell over you.

Founded by those sterling, sturdy pioneers who braved rigorous hardships of the then unsettled section, they are rich in Revolutionary romance, in Indian lore and legend. Nestled among hills and mountains, encircled by fertile fields, valleys, dells and lakes, they are two jewels in a natural, flawless

setting linking Peerless Pocono, on the North, with the Delaware Water Gap and the Blue Mountains, on the South.

Cities separate, but united in common welfare, they typify the heart's desire as cities of homes and contentment. They represent all that is worth while—good fellowship, social advantages, refinement and the state of mind appreciative of all that is good in life.

They are cities of many industries fostered and financed by progressive citizens. Industries wherein the workman labors with mind and heart, as well as with hand, producing exceptional products inter-wrought with that rare *quality* evident only when contentment has resulted from ideal living conditions and environments.

Of particular prominence is The International Boiler Works Co., whose products are used in all parts of the world. In this Institution, the organization—from executives to rivet boys—is enthusiastic, is intent, *is determined* to make International Boilers the best always—yes, the very best. To such an ideal, this company owes its progress and prestige.

'The train
curves and
climbs'

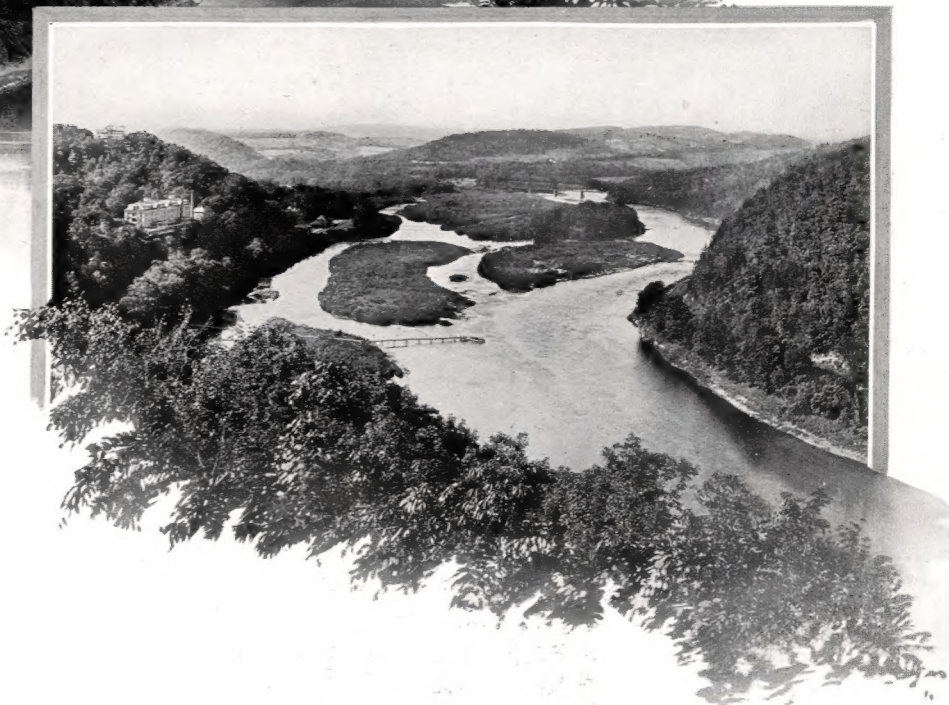




THE INTERNATIONAL BOILER WORKS CO.



'The mysterious
and fascinating
Delaware Water Gap'



Its inception dates back to July, 1886, when three far-sighted men, Henry Weiser, Henry Seiders and James W. Booth (now a vice-president) started under the names Weiser, Seiders & Co., and The International Boiler Works, in the old Glass Works on Washington Street, East Stroudsburg, where the present Armory stands.

The equipment was limited, and crude, consisting of a screw punch and a few small tools with bending rolls operated by hand. Six months later, a 10 H.P. boiler and a 5 H.P. engine were added. They had to feel their way which meant little to men of vision, purpose and the determination that overcomes all obstacles.

THE INTERNATIONAL BOILER WORKS CO.

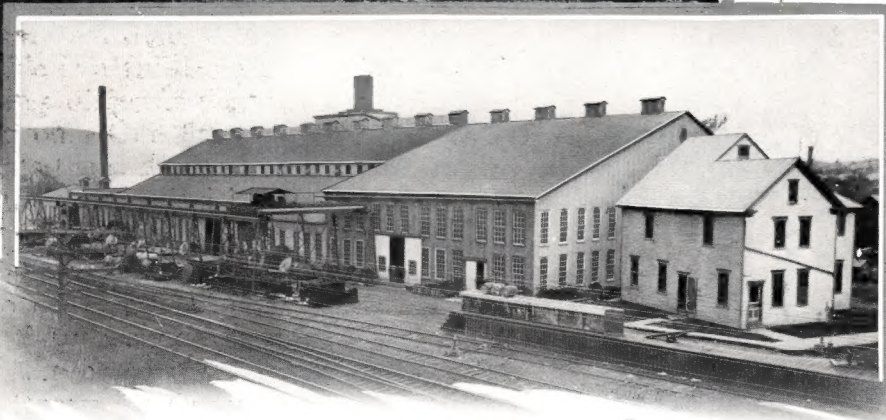


In 1888, the site of Shop No. 1, the Minnisink Plant (on the D. L. & W. as you enter East Stroudsburg) was purchased. A building 40' x 80' was erected and a 35 H.P. boiler and a 10 H.P. engine, with additional equipment, were installed.

Business rapidly increased and forced the erection, in 1889, of an additional building, thus doubling floor space. During this year, Mr. Weiser was succeeded by Mr. Charles R. Turn, now Treasurer and General Manager. The next ten years produced many changes. The equipment was increased, as business expanded; and cranes, hoists, special tools and other labor saving appliances included to secure greater production at minimum cost.

In 1898, fire completely destroyed the plant; but, in 1899, another was erected with considerably more floor space and equipped with all modern machinery for making boilers. This new plant was also known as Shop No. 1, and is illustrated in the two photographs shown below.

In February, 1900, the company was reorganized as The International Boiler Works Co., with Mr. Isaac S. Case, President, to whose business sagacity, judgment and financial support, the company largely owes its progress and prosperity. Associated with Mr. Case in the management and upbuilding were Mr. C. R. Turn, General Manager and Mr. W. Burnett Easton, Secretary and Treasurer.



Shop No. 1, the Minnisink Plant of The International Boiler Works Co.



THE INTERNATIONAL BOILER WORKS CO.



An Industrial Section of the Stroudsburgs

During this year, Shop No. 2, the Analomink Plant, on the D. L. & W. North of East Stroudsburg, was purchased. In this, vertical boilers, especially those for hoisting engines, tanks, etc., were constructed reserving Shop No. 1 for large marine and horizontal tubular boilers, special plate work, etc.

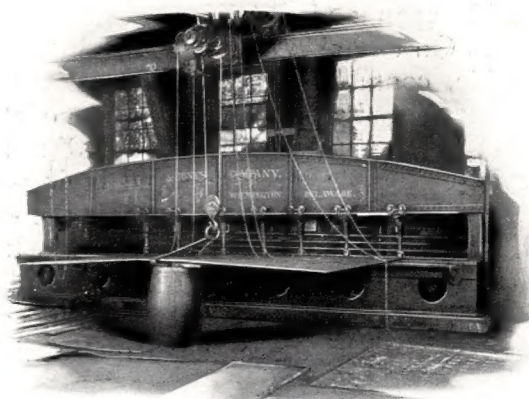
In November, 1910, Mr. Easton died and was succeeded by Mr. Charles S. Hebard as President, which office he now holds. Mr. James W. Booth was chosen Vice-President, Mr. C. R. Turn, Treasurer and General Manager, Hon. A. Mitchell Palmer, Secretary and Solicitor, and M. C. Easton, Assistant Secretary.

In 1914, Shop No. 2, the Analomink Plant, was enlarged one-third and additional machinery provided. In March, 1919, Mr. F. B. Metcalf, of the Baldwin Locomotive Works, Philadelphia, became identified as Vice-President; and, closely associated with Mr. Turn, assumed an active part in the management.

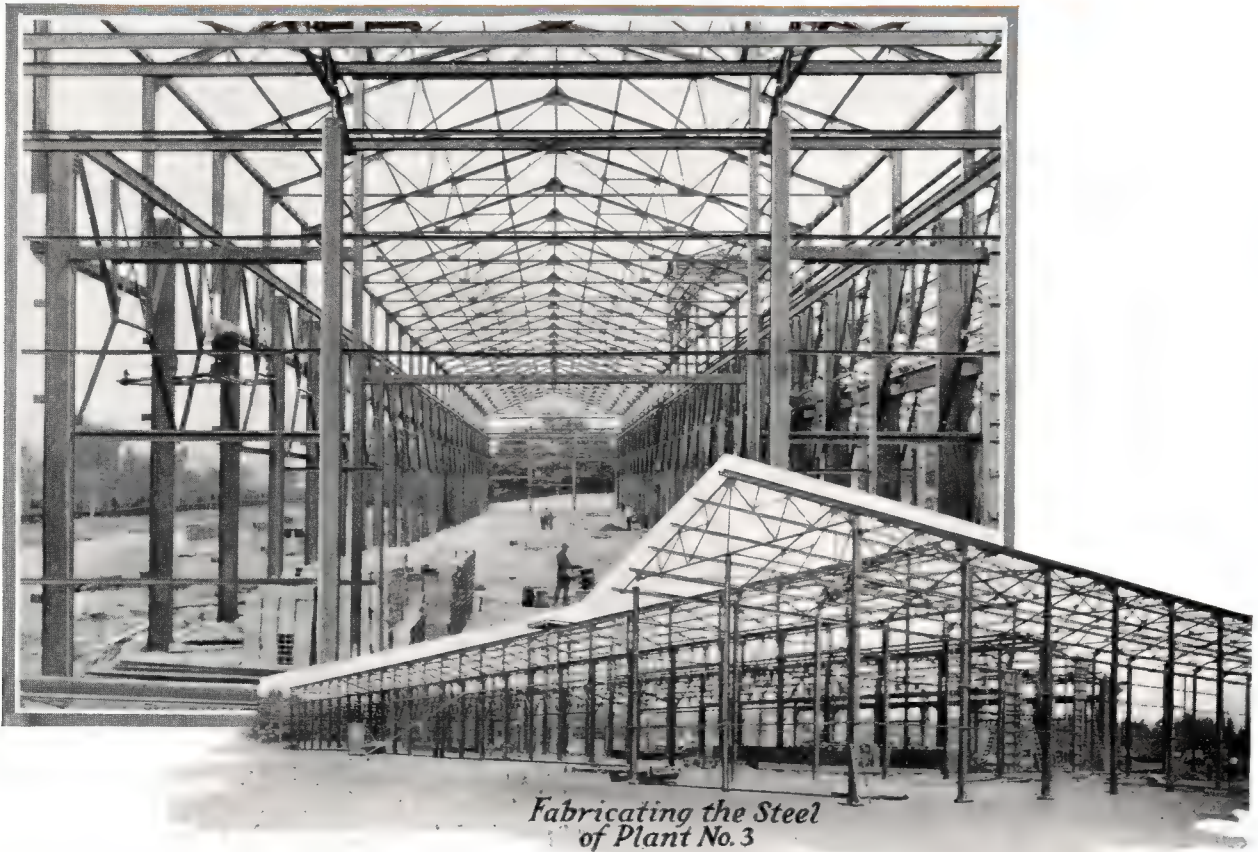
In July, 1919, Shop No. 2 was completely destroyed by fire, thus seriously crippling and handicapping production which then necessarily reverted to Shop No. 1 and forced it far beyond normal capacity.

In the fall of 1919, ground was broken for Plant No. 3, which, without question, represents highest achievement in industrial plant engineering. Its large and splendidly equipped shops, in which all production is now consolidated, were designed for the most systematic and efficient manufacturing of high grade boilers and allied plate work.

Limited space prevents complete treatment; but, by reference to the large exterior view in the centre of this book, to those of different sections and of the power plant, also of the many products—in connection with the short description following of main features only—a fair idea may be gained of the exceptional entirety of Plant No. 3.



20' Planer for beveling the edges of boiler plates



*Fabricating the Steel
of Plant No. 3*

The general plan is that of an "I-Beam" Section. The web is the main shop, over 500' long and 100' wide, with a crane runway, 51' span and 30' lift, extending full length. On one side is a full length "bay," 46' wide, containing different departments mentioned further on. One flange of the "I-Beam" represents the section, 210' x 40', containing the plate storage and laying-out floors. The other flange represents the section, 210' x 40', in which finished work is stored.

The construction throughout is steel, concrete and tile therefore the plant is *absolutely fireproof*. Heavy steel columns, 20' Ctr. to Ctr. and reinforced for the crane runway, support the steel roof trusses

and the roof, also of concrete. 2" air feed lines on each column supply auxiliary air receivers and the manifolds in which are air hose connections. At each column, on both sides of the shop, are connections for electric lamps and portable drills. 500 watt reflecting lamps furnish artificial light; and natural light is secured through glass surfaces comprising 68% of the total wall area.

Ideally located on open, high ground with an abundance of sunshine and pure air, cool in summer, warm in winter, clean and sanitary, the working conditions are perfect.

The total effective floor area is 82,678 sq. ft.; and, with its own water, power, current,



THE INTERNATIONAL BOILER WORKS CO.

air and light, the plant is practically independent of all outside sources of supply excepting coal which is stored in large tonnage. Two submerged fuel oil storage tanks of 16,500 gal. capacity lie between the main

shop and power plant. A 15,000 gal. concrete well stores water derived from private source and used for boiler feeding, etc. Pure, artesian well drinking water flows continuously at many places in the plant.

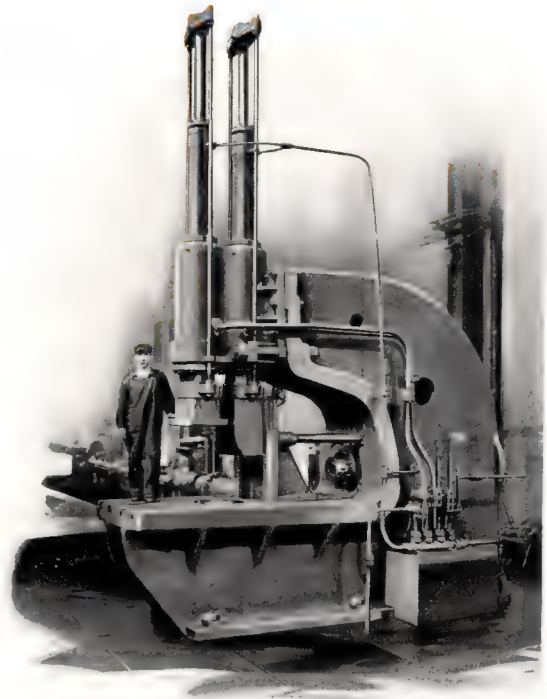




A journey through the plant will now be taken, entering on track No. 2 where the stored plates are either stacked vertically, in steel racks according to size, or laid flat if of special nature. This section also contains the laying-out department, with concrete floor, and equipped with steel templates, gauges and necessary tables. A 5 ton, high speed electric traveling crane and jib cranes with hoists serve this section.

Entering the main shop, all large machines—shears, punches, presses, bending rolls (18' long with a capacity of $\frac{3}{4}$ " plate to a circle 30" dia. and 1" plate maximum) and 20' planers—in duplicate units are grouped in proper sequence of use along each wall for about 150' from the entrance. Each machine has individual, electric drive and is served by a jib crane with either electric or hand hoist. Over all is a 5 ton, high speed electric traveling crane.

Beyond these large machines and located along one side in order of use are the drills each served by a jib crane and hoist, also by traveling cranes. In the intervening space, of approximately 250' x 51', between

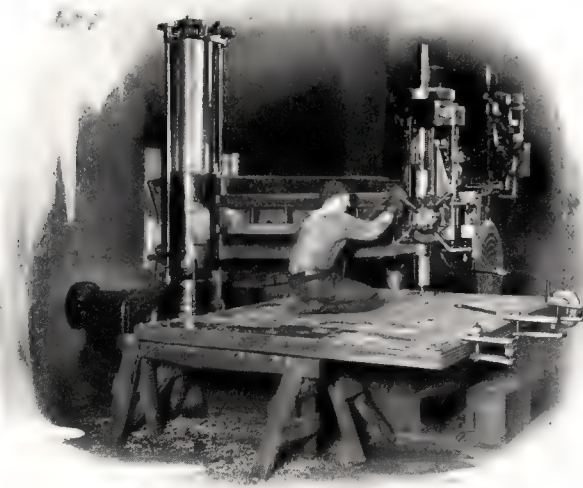


200 Ton Sectional Flanging Press

the rolls, and planers, and the testing floor, are the floors where the boilers are fitted and assembled both preparatory and finally. A 10 ton, high speed electric traveling crane and jib cranes serve this section.

In the bay, at the centre of the shop, is the riveting tower, easily accessible to the main cranes, and containing reinforced concrete platforms on steel supporting structures. Three riveters—a 100 ton hydraulic and 2 pneumatic, 1—80 ton and 1—60 ton—of most approved type complete with accessories, are located here. Three traveling cranes—a 10 ton hydraulic and 2—5 ton electric—all with *clear lift of over 50'*, serve the riveters.

On the assembling floors, between the riveting tower and the testing floor, all boiler tubes are installed, calking done, and the boilers completely finished, ready for test-



Drilling eight boiler plates simultaneously



THE INTERNATIONAL BOILER WORKS CO.



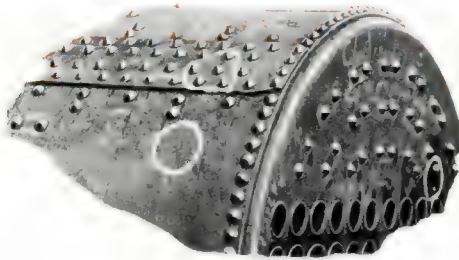
*View through Shop
from Laying-out Floor*



*View through Shop
from Testing Floor*



Butt Joint
quadruple
riveted



ing. This takes place on a self-draining, concrete floor over a submerged tank of 20,000 gals. capacity which stores the testing water for repeated use. A 15 ton, high speed electric traveling crane serves this floor from which loading is done on track No. 1, having inside extension for 3 freight cars.

Beyond the testing and loading floor is the storage section (served by a 20 ton electric traveling crane) in which completed boilers pending shipment are placed and thoroughly protected from the elements. Direct, quick shipment is secured by means of track No. 1 to the *main line* of the D. L. & W. R. R. and the Pennsylvania Lines.

It will be easily seen that the plant's general design allows all work to move in straight-line progression, from raw materials to finished products, without unnecessary handling and with lowest possible production costs.

This covers, in general, the production process.

In the bay and nearest the plate storage, is a completely equipped machine shop, 100' x 40', in which special machinery is installed for plant upkeep, the making of stay bolts, etc. It has a concrete floor on which portable floor cranes are used to serve various machines some of which have jib cranes. Air and electric connections also aid in efficient production.

Next is the flanging and smithing shop, 140' x 46', completely partitioned off from the main shop and having motor driven fan ventilators to eliminate gases. It contains hydraulic and pneumatic flanging machinery, smithing fires, a large oil heated flanging furnace, 2 electric traveling cranes, and jib cranes, with hoists. Conveniently located outside are fireproof buildings for the storage of bar iron, pipe, boiler braces, rivets and tubes.

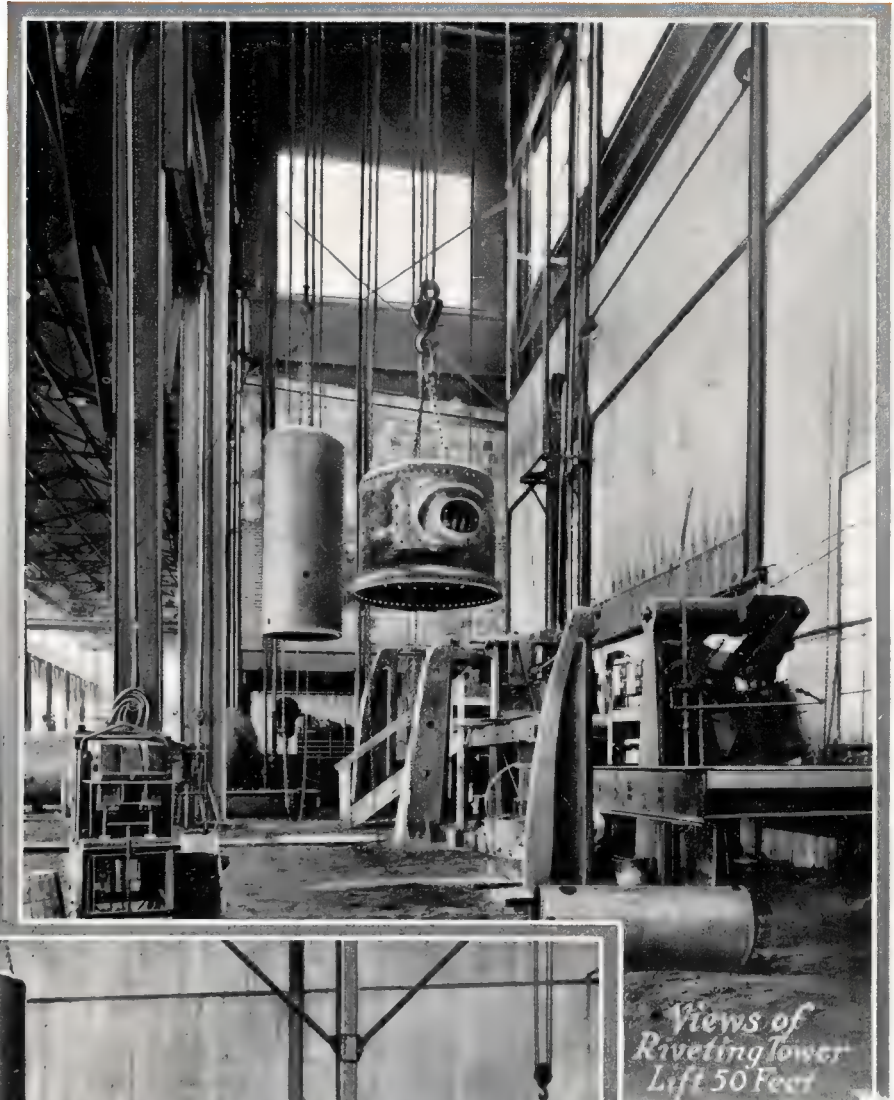
At the centre of the shop are the tool room and the fittings room. The first contains gauges, hand tools and other appliances. The second contains bolts, nuts, packing, gauge



54" x 192" Hot Water Tank Shell
on the hydraulic riveter



THE INTERNATIONAL BOILER WORKS CO.



*Views of
Riveting Tower
Lift 50 Feet*



glasses, pipe fittings, valves, etc. Above is the Superintendent's office, slightly projecting to provide a clear view throughout the entire shop. Also above is the workmen's welfare room containing washing facilities with hot and cold water through special mixing valves, toilets and individual, steel lockers.

Next is a section of the bay containing electric rivet heaters, grinders and other equipment, also additional fitting-up floors, all served with cranes.

Occupying a section, 120' x 46', and extending to the extreme end of the bay, is the stack shop with complete equipment electrically driven and served by traveling and jib cranes fitted with hoists. This shop is en-

tirely independent of the main shop, an important feature, since, contrary to general practice, the stack and breeching work does not interfere with regular work.

In a separate, fireproof building, 60' x 40', located near the storage section, is the carpenter shop, equipped with electrically driven woodworking machinery.

Isolated from the main shop and 100' distant, is the power plant also completely fireproof due to its construction of steel, tile and concrete. The boiler room, 62' x 40', contains 4—150 H.P. International H. T. boilers, each 72" x 18', on improved steel suspension setting, entirely independent of the brick work. A steel smoke connection enters the special 100' high self-supporting steel stack. The coal and fuel oil are unloaded by gravity from elevated track No. 3; and an automatic feed water regulator controls the feed water supply to the boilers, which are fitted with an automatic draft regulator. A 600 H.P. Linton combined feed water heater, purifier and oil extractor, and an outside packed feed water pump, 70 G.P.M. capacity, also are in the boiler room.

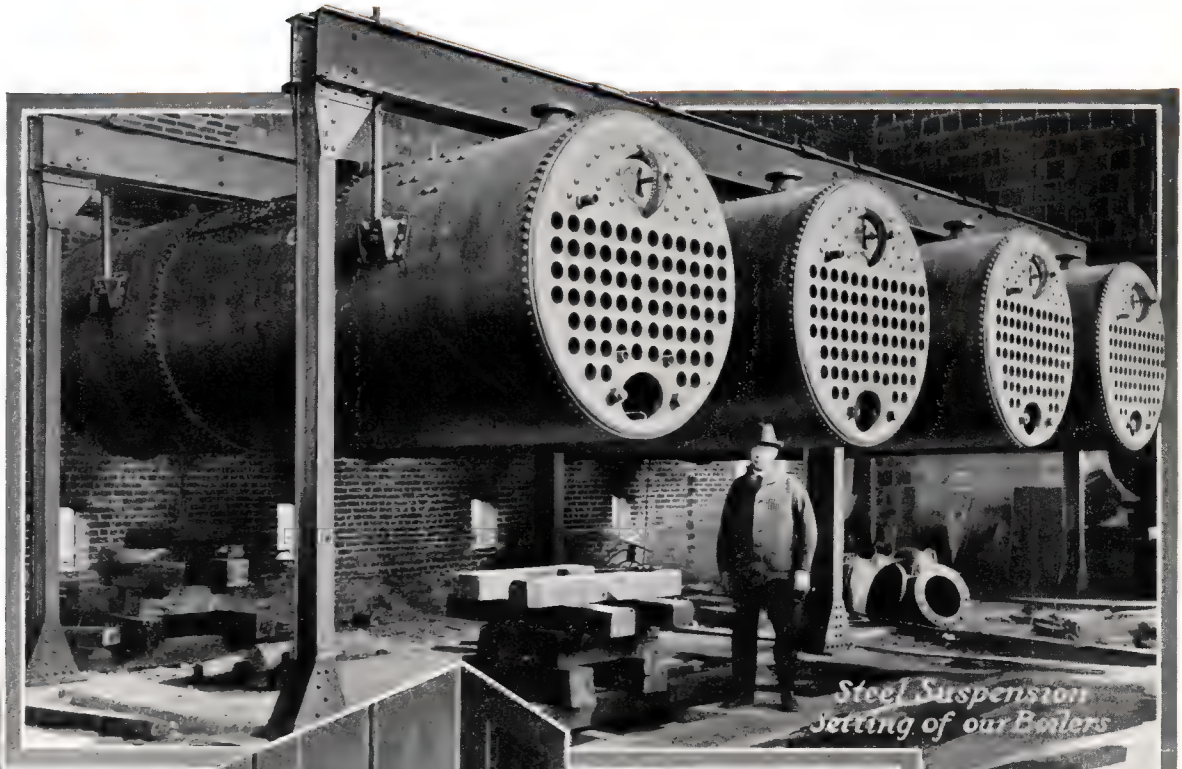


One of the large Radial Drills

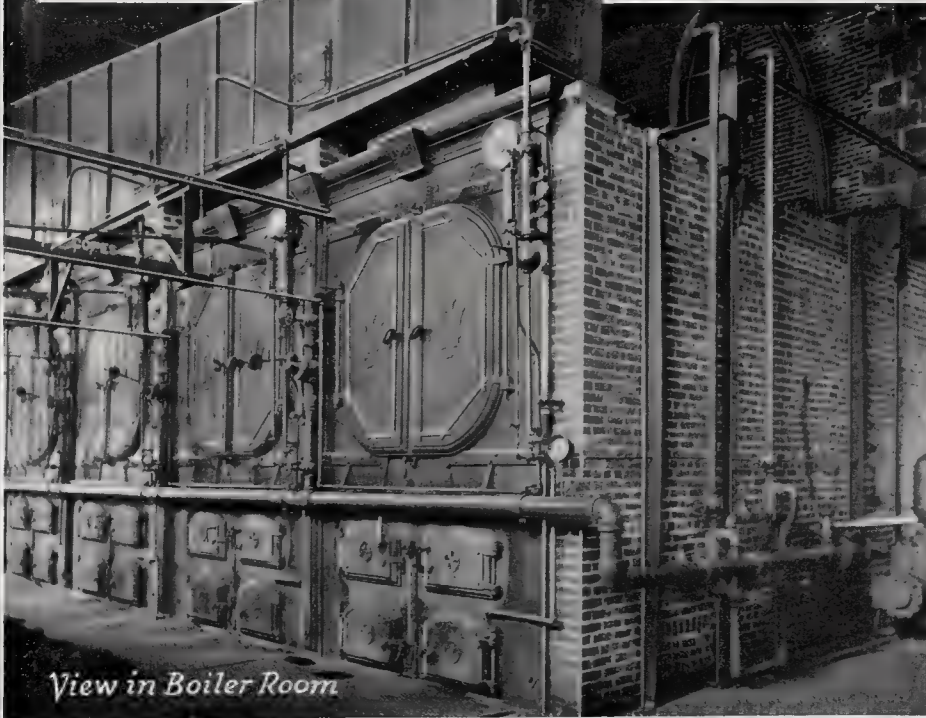
The engine room, also 62' x 40', has a 10 ton traveling crane with hoist. It contains these units: 1—200 K.W. General Electric, D.C. generator direct-connected to a 300 H.P. medium speed Corliss engine made by the Ball Engine Co. of Erie, Pa.; 1—50 K.W. Westinghouse A.C. generator for the rivet heaters, and 1—50 K.W. General Electric D.C. generator, both direct-connected to 75 H.P. Ball high speed engines—all with 250 voltage. Also 2 Ingersoll-Rand, steam driven air compressors—1 of 1,190 cu. ft. capacity and 1 of 850 cu. ft. capacity—hydraulic accumulator, 10" x 12", with 1,500 lb. water pressure and 100,000 lb. ballast and a hydraulic pump of 50 G.P.M. capacity. A



THE INTERNATIONAL BOILER WORKS CO.



*Steel Suspension
Setting of our Boilers*



View in Boiler Room

THE INTERNATIONAL BOILER WORKS CO.



modern switch board, fully equipped, oil filters and other necessary appliances are included.

The compressors deliver to a 54" x 12' vertical air receiver in the engine room. An 8" line runs to the main shop, branching into two 6" lines rising, on each side of the shop, to supply headers running full length on each side. These gradually decrease to 3" dia. at the ends. Auxiliary air receivers are located at several points in the main shop where demands for compressed air are greatest.

The exhaust steam from all engines enters a 16" header, then passes through the feed water heater. It heats the shops, by direct radiation, in winter and is returned, by a vacuum pumping system, to the heater; and, in summer time, goes directly to the atmosphere.

air lines, hydraulic lines of 1,500 lb. pressure, high pressure steam lines to steam hammers, water supply lines, return lines from hydraulic equipment and heating system, water line from riveting tower roof tank and, racked on the opposite side, all current lines in conduit.

Such, in general, is Plant No. 3 of The International Boiler Works Co. But this would not be complete without mention of the personal element entering into its achievement and operation. The history of this Institution, from its inception, is that of successful evolution and forced expansion.

Suffering two complete conflagrations, it arose, Phoenix-like, from the ashes due solely to the indomitable energy, enthusiasm and fixed purpose of the Management throughout all these years. With a proven



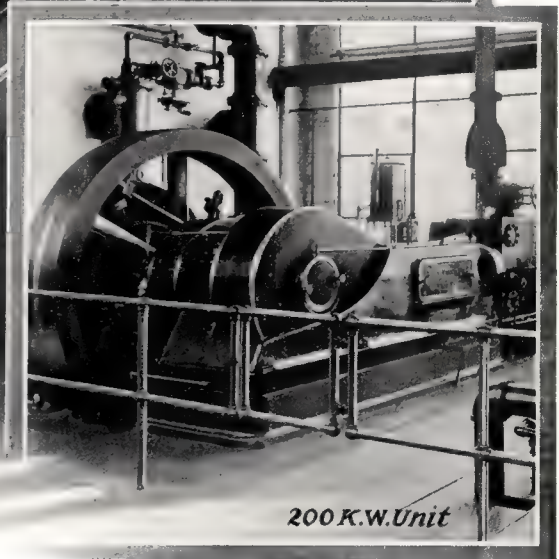
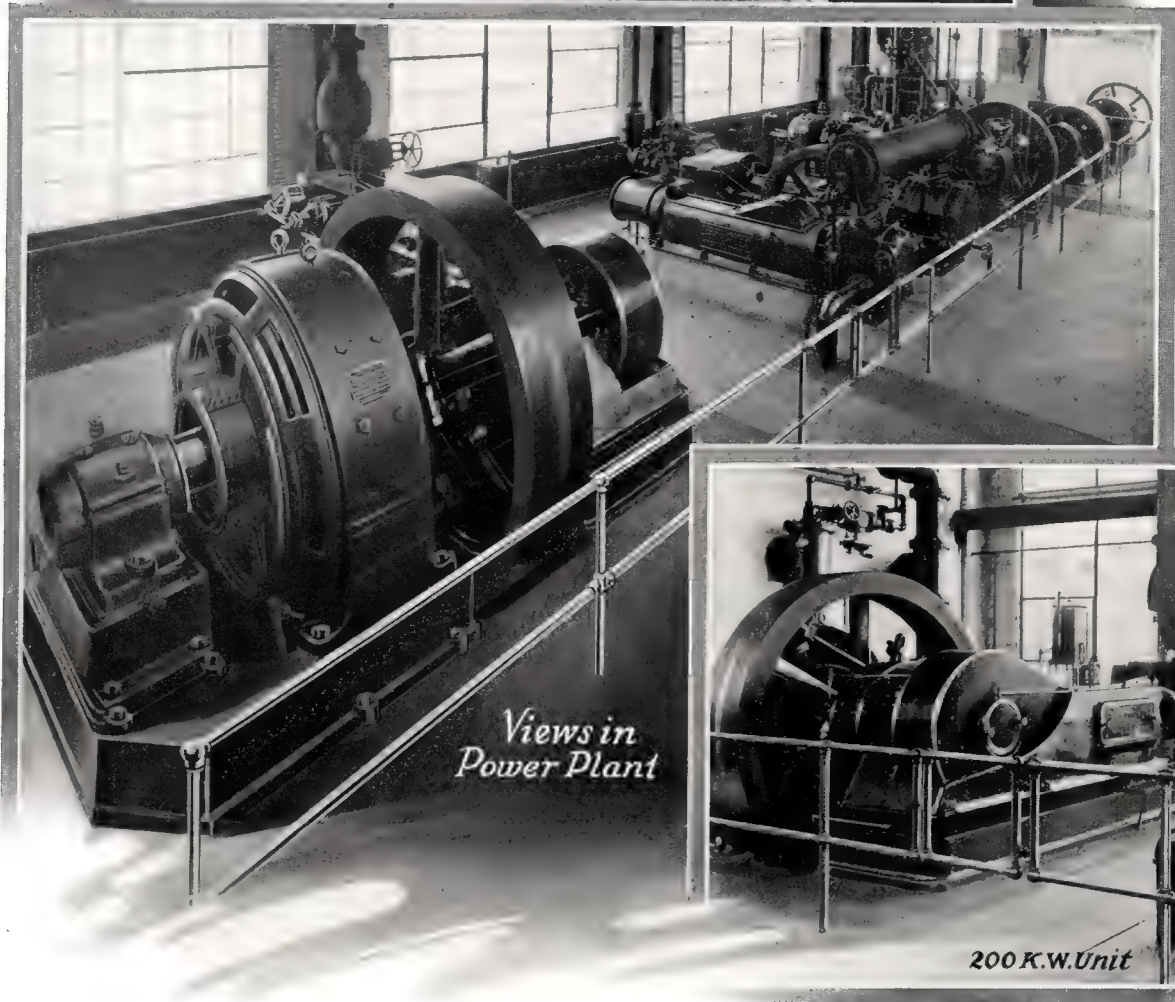
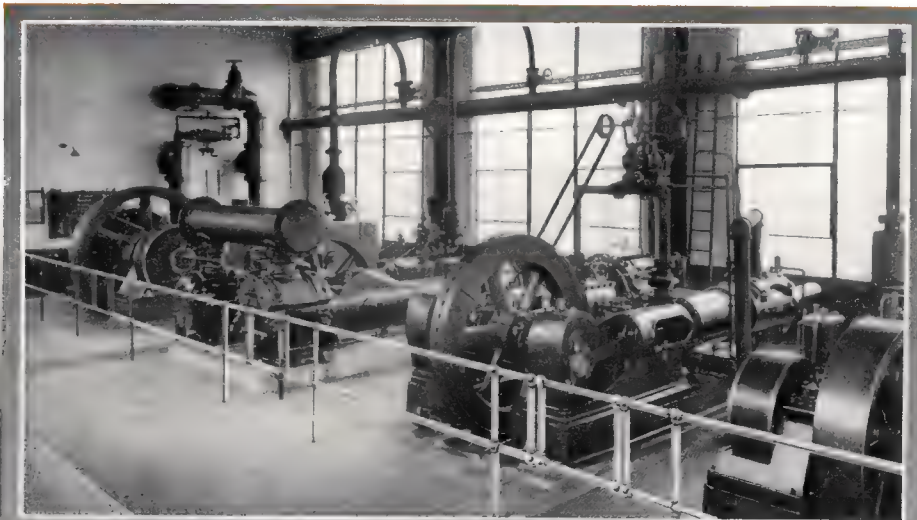
Hydro-Pneumatic Tank 108" diam. by 40' long

A special and unique feature—between the power plant and main shop—is the concrete tunnel, 100' long by 6'-6" high by 4'-6" wide inside, lighted and ventilated. It contains, on one side, the heating lines, compressed

line of unsurpassed boilers, with a spirit that would not be downed, nor even daunted, by mishaps and business vicissitudes, the Management met every difficulty, every problem—met it successfully.



THE INTERNATIONAL BOILER WORKS CO.



THE INTERNATIONAL BOILER WORKS CO.



And one great contributing factor to success is the Organization—Management and Co-workers—in which is the closest spirit of co-operation and intense loyalty. Labor dissensions and disturbances are unknown. Many of the workmen have spent their lives making International Boilers; many have sons and grandsons working side by side with them—three generations of inherent ability and skill, *all with an Ideal.*

For as the poet said—

‘No task is ill where
hand and heart and
skill and strength
have equal gain.’

A corps of engineers—specialists in the design and construction of boilers and allied plate work—is at the disposal of intending purchasers for whom recommendations and estimates will be cheerfully made after receipt of complete information.

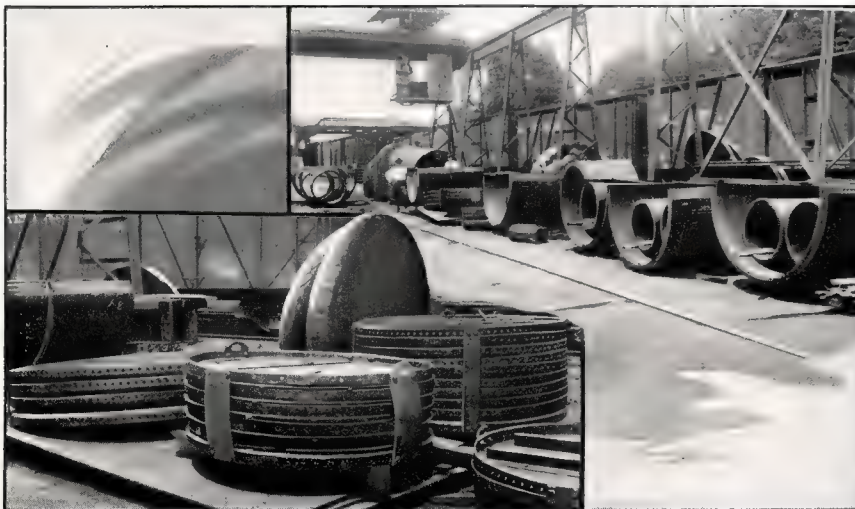
It seems permissible to briefly mention the leadership of Mr. Charles R. Turn, Treasurer and General Manager, who imbued this

spirit of co-operation and cemented together this wonderful organization. Entering the company in 1895, as a stranger to the business, he quickly grasped all details of manufacture and marketing; and, with characteristic, sound judgment, accuracy of decision and progressive spirit, pursued the policy of selecting associates of dependence in whom full trust and responsibility could be placed and of giving them full credit for results.

Mr. Turn is also President of the Stroudsburg National Bank, Treasurer of the Roseto Company (silk manufacturers), President of the Board of Trustees of the East Stroudsburg State Normal School and Trustee of the General Hospital of Monroe County. He is actively interested also in civic and social affairs.

In conclusion, it is frankly believed that the plant, facilities and organization of The International Boiler Works Co., truly depicted herein, will be of real consequence to those interested in exceptional products of this nature.

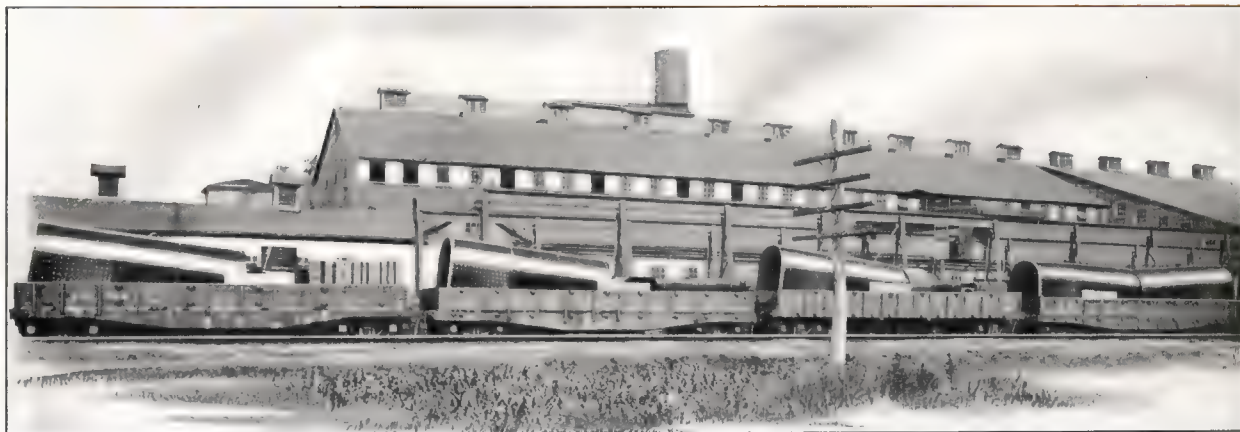
○ ○ ○



A ‘nested’ shipment
ready to start on its
way to Foreign
Countries



THE INTERNATIONAL BOILER WORKS CO.



Part of an eight carload shipment of boilers to Argentine

International Foreign Trade

When the name — International Boiler Works—was selected in 1886 and subsequently changed to the International Boiler Works Co., it was probably with very little, if any, realization of its future significance.

In those days, very little foreign or overseas trade was received; but, as the sterling worth of International Boilers became recognized in the world's markets, the name "International" more and more befittingly represented both the Institution and its products.

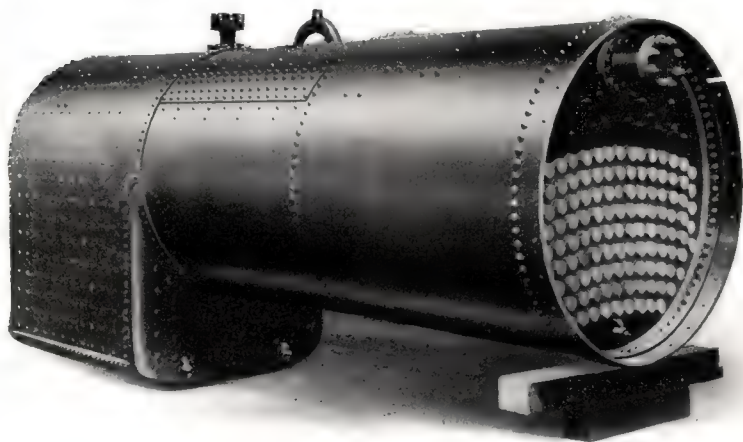
Today, the company enjoys a large and highly gratifying trade outside the United States and embracing practically all countries wherein steam is used for power or other purposes.

Among those purchasers are foreign governments, institutions, industrial plants and various other enterprises where International Boilers—far from their native town—are ably perpetuating their well chosen name.

Following are a few only of the foreign countries to which they have been shipped: Africa, Argentine, Brazil, China, Cuba, France, Japan, Mexico, Norway, The Philippines, Russia, Hawaiian Islands, India and also to Canada.

○ ○ ○

One of the above boilers with its tubes plugged to permit floating to shore at destination





World's War Activities. During the recent World's War, The International Boiler Works Co. concentrated the entire production facilities of its two plants—Nos. 1 and 2—on products for both the United States Government and many other private institutions, also engaged in war work.

Marine work especially was constructed in large volume, the two plants operating day and night on such; and the executives were personally engaged in war activities, both national and local.

The company was honored with a Certificate of Meritorious Effort in view of its action.

The International Vertical Boiler

Standard Type—A. S. M. E. Code

A short description of its construction processes which, in general, apply to other International Boilers

From the large stock of plates as received from the mills, those for the particular boiler are selected and carefully calipered to insure specified gauge. Each plate is rigidly inspected and, if not to prescribed standard, is rejected.

All plates have a tensile strength of from 55,000 to 65,000 lbs. per sq. in. and the elastic limit and elongation conform to the A. S. M. E. Code.

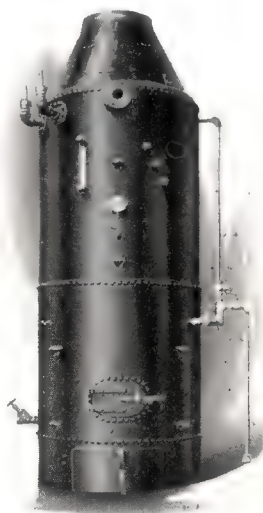
The flat plates are first laid out by experienced layers-out, then taken to the drill presses and all rivet holes drilled $\frac{1}{8}$ " smaller than full size. The plates are then taken to the planers and the edges squared and beveled to an angle no sharper than 70 deg. with the plane of plate. The beveled edges facilitate calking and greatly add to appearance.

Next is the bending which is done in power-driven rolls and not by blows. The correct curvature is secured by increments and determined by special gauges.

Next is the assembling. The rolled plates are sent to the assembling floor to which

have been sent also the firebox plates, butt straps and tube heads meanwhile prepared.

The tube heads are flanged on special, hydraulic presses exerting a pressure of 150 tons. For annealing in connection with these presses, large oil-heating furnaces are used. The entire plate is slowly heated to a uniform temperature throughout and the flanging done in one operation. The heads are then allowed to cool gradually and anneal thoroughly with no internal strains.



The tube heads are carefully laid out from steel templates to insure absolute alignment when in the boiler. They are drilled from solid plate and the edges of all tube holes are chamfered.

Now all material is assembled with fitting-up bolts, and the boiler is taken to a radial drill where the rivet holes and stay bolt holes are drilled out full size and the rivet holes reamed with fluted reamers. The boiler is then taken apart and all burrs due to drilling removed. It is then reassembled, bolted together, taken to the riveting



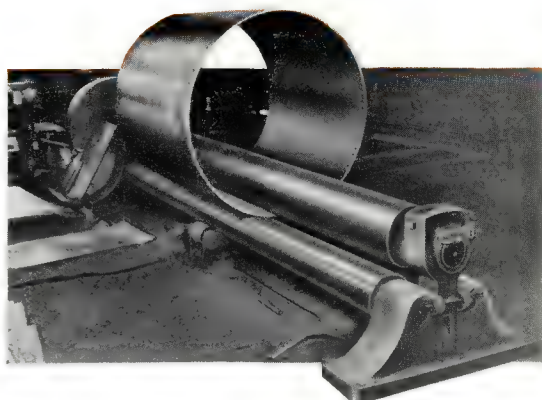
THE INTERNATIONAL BOILER WORKS CO.

tower and is machine riveted with a hydraulic riveter with pressure varying from 20 to 115 tons according to size of rivet. The few inaccessible rivets are driven by compressed air hammers. In all cases, the rivet exactly fills the reamed hole.

The stay bolts are screwed in and riveted over, the tubes are installed, expanded and carefully beaded over on each end.

The steam and safety valve openings are forged steel flanges, or cast steel nozzles according to size of the opening required, carefully fitted to the shell curvature and riveted by hydraulic pressure. The boiler is calked with a round-nosed tool driven by compressed air. The shell is calked on the outside only and the firebox on both outside and inside rivet seams thereby insuring tight joints when expansion takes place.

The boiler is given a final hydrostatic test at least 50% greater than the working pres-



Bending boiler plate

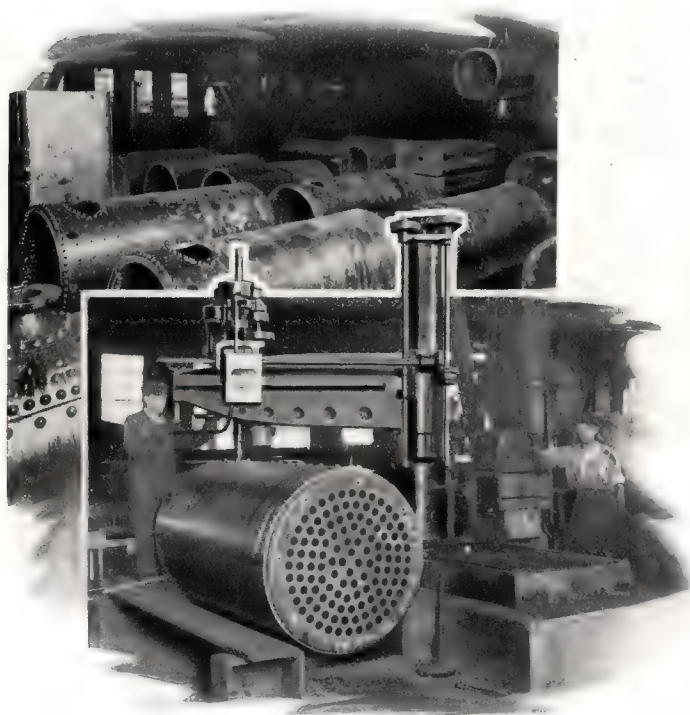
sure and is stamped by a Licensed Inspector of Steam Boilers according to prescribed regulations.

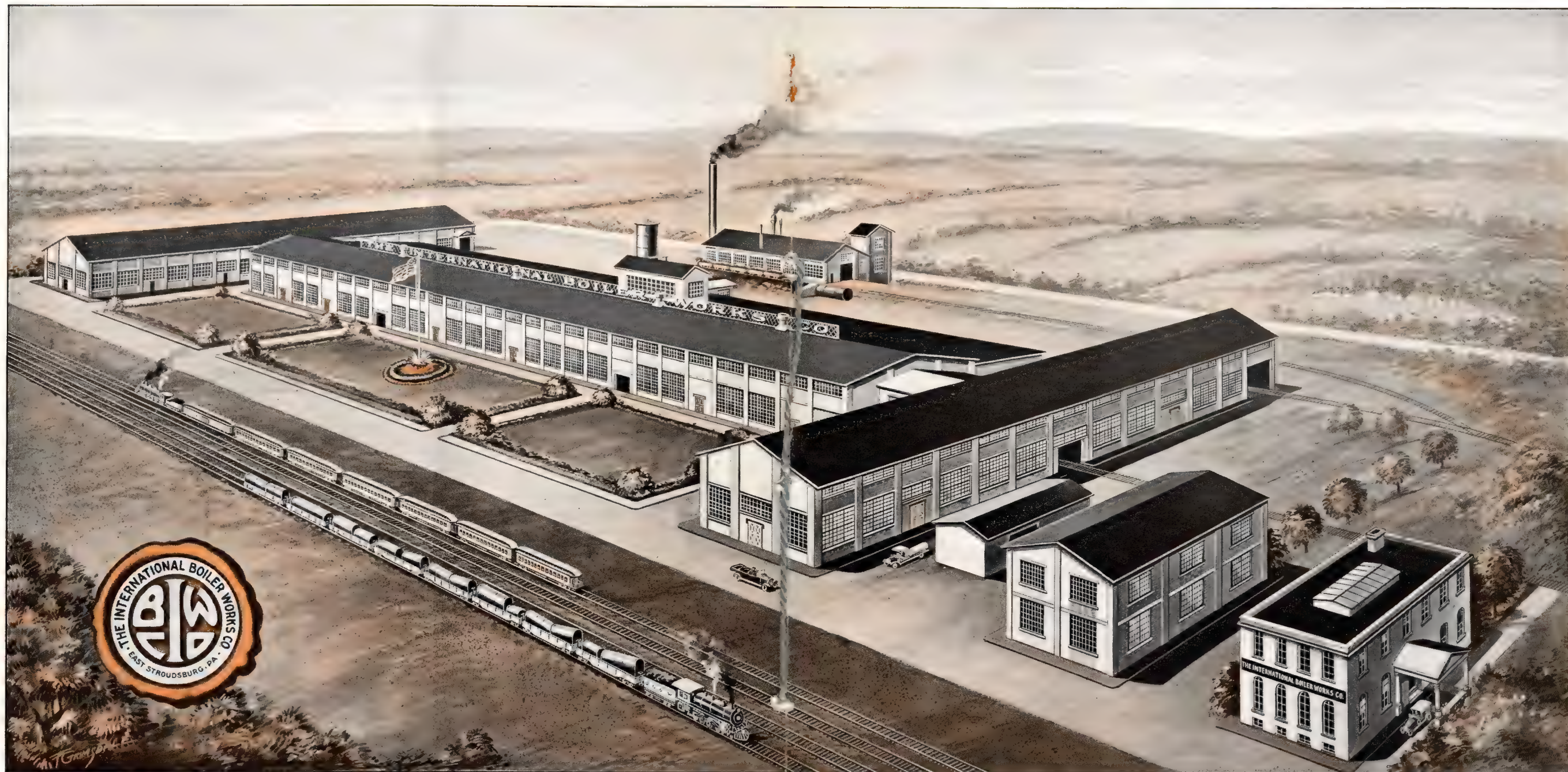
After painting, it is either shipped direct to the purchaser or is stored in the absolutely dry storage section of the plant and not exposed to the elements.



Upper view shows part of a large shipment of A. S. M. E. Vertical Boilers on the assembling floor preparatory to completion

Lower view shows the drilling out to full size of all rivet holes





Absolutely fireproof throughout.
Steel, concrete and tile construction
even to the roofs—also of concrete.
Wall and roof area is 68% glass.
Effective floor space is 82,678 sq. ft.
3 railroad tracks on premises.
Its own independent air, current, heat,
light, power and water.
Large coal and fuel oil storage.
Riveting tower 50 ft. high.
All machinery is electrically driven.

Plant No. 3 of
The International Boiler Works Co.
On the Main Line of D. L. & W. R. R.
East Stroudsburg, Pa., U. S. A.

Separate, independent power plant.
Fully equipped, independent stack shop.
H. S. electric travelling cranes from 3 tons
to 20 tons capacity.
Main cranes—500 ft. travel, 51 ft. span and
30 ft. clear lift.
Working conditions are ideal.
Straight line progression of products
from raw materials to completion.
Specializing in high grade boilers and
allied plate work.



The International Vertical Boiler

Standard Type

The International Vertical Boiler—Standard Type—with full length tubes for 125 lbs. working pressure, is designed and constructed in accordance with the American Society of Mechanical Engineers' Code.

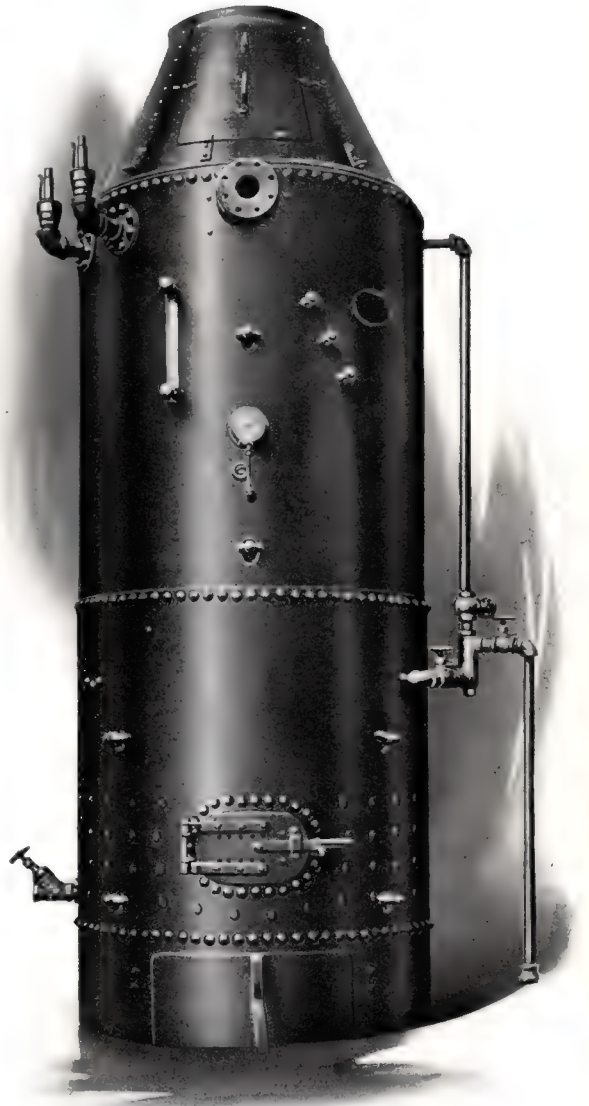
The best grade of homogeneous, open hearth steel is used with the name of the maker, the brand and tensile strength plainly stamped on each plate. All surfaces exposed to the products of combustion are fire box steel.

The longitudinal seams are the double butt-strap type either double or triple riveted according to the size of the boiler. Rivet holes are drilled small, reamed out to full size with all sharp edges and burrs carefully removed before riveting. Rivets are open hearth, mild steel free from injurious defects and are fully tested to the requirements of the A. S. M. E. Code.

The fire box is properly stayed to the shell. The stay bolts are best quality stay bolt iron or mild steel, the specifications of which conform to the requirements of boiler rivet steel.

The steel tubes are the best American make, full gauge, and tested to 1000 lbs. per sq. in. The tube holes are drilled from solid plate and the tubes are expanded and beaded over on each end.

Handholes at the crown sheet and water leg readily permit proper cleaning. Each handhole is fitted with plate, bolt, yoke and



**The International Vertical Boiler
Standard Type A. S. M. E. Code**

See page 50 for Sizes and Data



THE INTERNATIONAL BOILER WORKS CO.

gasket. Wrought iron or steel rings are fitted at the base and the fire door opening is of special construction which insures its being leak proof. The door is boiler plate, neatly fitted, hinged to the shell and has suitable fire liner.

The fittings are heavy and include the following: base with grate ring, grates, hood, steam gauge, water gauge, gauge cocks, safety valve, blow-off valve, feed and check valves.

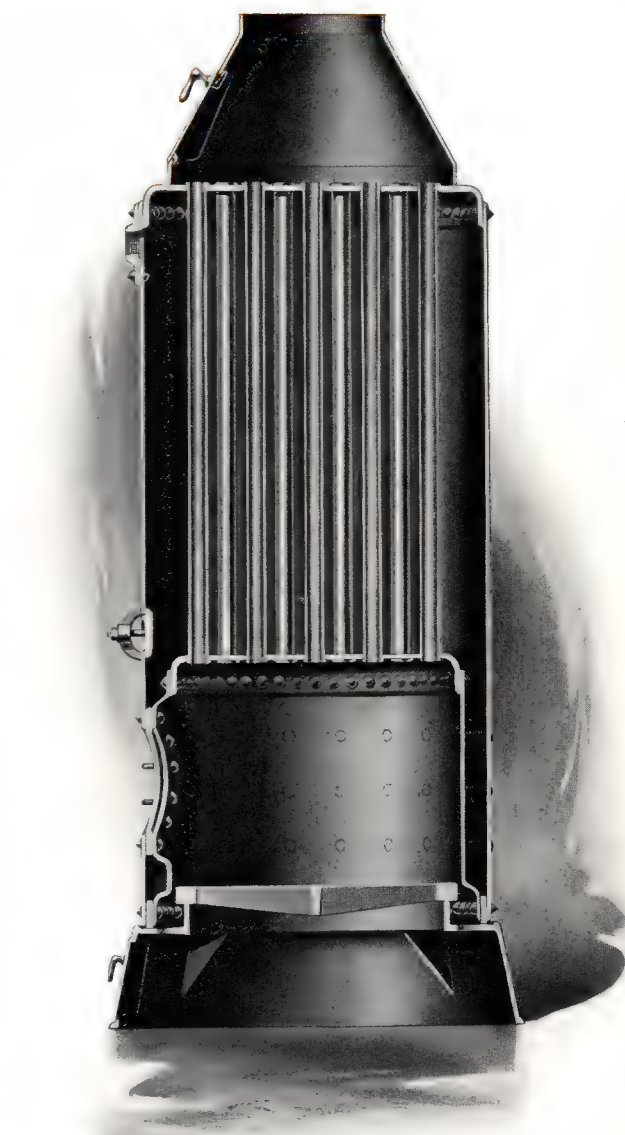
Each boiler is regularly inspected during the process of construction by a Licensed Inspector of Steam Boilers, tested in his presence to a hydrostatic pressure of 188 lbs. per sq. in. and then stamped according to the A. S. M. E. Code and the State Laws or the National Board of Boiler and Pressure Vessel Inspectors.

The International is without doubt the most economical and dependable vertical boiler on the market. The materials are strictly highest grade and the workmanship is unexcelled, incorporating, as it does, the concentrated experience and skill gained in many years of boiler making.

It is for all purposes—stationary and portable service—especially where the minimum of floor space occupied is highly desirable.

Its exclusive use in all kinds of industries throughout the world and the many thousands of every size that are giving efficient results are, we candidly feel, the best recommendations and guarantee for its exceptional superiority.

The International Vertical Boiler—Standard Type—is made in a comprehensive range of horse power from 4 to 150 inclusive—fully tabulated on page 50. It is made



Sectional View
The International Vertical Boiler
Standard Type A. M. S. E. Code

also in special designs and sizes for higher working pressures.

This type can be constructed also to Marine, Massachusetts or Canadian Interprovincial Regulations.



The International Vertical Boiler

Submerged Tube Type

The International Vertical Boiler—Submerged Tube Type—for working pressures from 100 to 125 lbs., is designed and constructed according to the A. S. M. E. Code, the Massachusetts State Requirements, the Canadian Interprovincial Regulations or to all of them.

The same high grade materials and workmanship that individualize the International Standard Vertical Type Boiler—with full length tubes—are featured. The furnace and cone top are properly stayed to the shell and longitudinal seams are the butt joint type double riveted. Sufficient hand holes permit proper cleaning and inspection.

The steel tubes are the best American make, full gauge, and tested to 1000 lbs. per sq. in. The tube holes are drilled from solid plate and the tubes are expanded and beaded over on each end.

Each boiler is complete with the following fittings and fixtures: base with grate ring, grates, steam gauge, water gauge, gauge cocks, safety valve, blow-off valve, feed and check valves.

Each boiler is regularly inspected during construction by a Licensed Inspector of Steam Boilers, tested in his presence to a hydrostatic pressure 50% greater than the working pressure, then stamped according to the A. S. M. E. Code, the Massachusetts State Requirements, the National Board of Boiler and Pressure Vessel Inspectors, the Canadian Interprovincial Regulations or to all of them.

The International Vertical Boiler—Submerged Tube Type—is for all marine, sta-

tionary or portable purposes and is made in a comprehensive range of horse power from 4 to 70 inclusive by special order only.

Prices on application.



**The International Vertical Boiler
Submerged Tube Type**



The International Vertical Boiler

Hoisting Engine Type

The International Vertical Boiler—Hoisting Engine Type—with full length tubes for 125 lbs. working pressure, is designed and constructed according to the A. S. M. E. Code, the Massachusetts State Requirements, the Canadian Interprovincial Regulations or to all of them.

In general, it is the same as the Standard Type, but has the maximum number of tubes and a different arrangement of hand-holes and tappings to conform to the different engine designs of hoisting engine manufacturers.

The same high grade, homogeneous, open hearth steel is used, each plate plainly stamped with maker's name, brand and tensile strength. The longitudinal seams are double butt-strapped and either double or triple riveted according to size of boiler.

The steel tubes are best American make, full gauge, tested to 1000 lbs. per sq. in., and are expanded and beaded over on each end.

Each boiler is fitted with hood, four feet of stack with shifting top, grates and grate ring. During construction, each boiler is regularly inspected by a Licensed Inspector of Steam Boilers, tested in his presence by a hydrostatic pressure of 188 lbs. per sq. in., then stamped according to the A. S. M. E. Code, the Massachusetts State Requirements, the National Board of Boiler & Pressure Vessel Inspectors, the Canadian Interprovincial Regulations or to all of them.

This boiler is made in a range of horsepower sufficient for all requirements of the hoisting engine manufacturers. Prices on application.



The International Vertical Boiler
Hoisting Engine Type



The International Vertical Boiler

Steam Shovel Type

The International Vertical Boiler—Steam Shovel Type—with full length tubes for 150 lbs. working pressure, is designed and constructed according to the A. S. M. E. Code, the Massachusetts State Requirements, the Canadian Interprovincial Regulations or to all of them.

In general, it is the same as the Standard Type, but has the maximum number of tubes and a different arrangement of hand holes to conform to the different engine designs of steam shovel manufacturers.

The steel is homogeneous, open hearth of highest grade with name of maker, brand and tensile strength plainly stamped on each plate. The longitudinal seams are double butt-strapped and either double or single riveted according to size of boiler.

Best American make steel tubes, full gauge, and tested to 1000 lbs. per sq. in., are used. Tubes are expanded and beaded over on each end.

The fire door is boiler plate, neatly fitted, hinged to the shell and has suitable liner. The fire door opening is leak proof.

Each boiler is fitted with hood, stack, grates and grate ring. A heavy sheet steel water tank of suitable capacity is also supplied.

During construction, each boiler is regularly inspected by a Licensed Inspector of Steam Boilers, tested in his presence to a hydrostatic pressure of 225 lbs. per sq. in., and stamped according to the A. S. M. E. Code, the Massachusetts State Requirements, the National Board of Boiler & Pressure Vessel



**The International Vertical Boiler
Steam Shovel Type**



THE INTERNATIONAL BOILER WORKS CO.

Inspectors, the Canadian Interprovincial Regulations or to all of them.

The International Vertical Boiler—Steam Shovel Type—is made in a range of sizes,

horse power and working pressures to meet all requirements of the steam shovel manufacturers.

Prices on application.

A carload shipment of 10 complete International Steam Shovel Boilers



Typical scene showing a modern Steam Shovel in operation, excavating for tunnel connection between two buildings of a large industrial plant

The International Steam Shovel Boiler illustrated on the opposite page furnishes the steam power for this labor saving machine



The International Return Tubular Boiler

Standard Horizontal Type

The International Return Tubular Boiler—Standard Horizontal Type—for working pressures of 100, 125 and 150 lbs., is designed and constructed according to the American Society of Mechanical Engineers' Code.

The shell and heads are best open hearth fire box steel with a tensile strength of from 55,000 to 60,000 lbs. per sq. in., and at least 50% of ductility as indicated by the contraction of area at point of fracture under test; and an elongation of $\frac{1,500,000}{T.S.}$ measured on a length of 8 inches.

Each plate is legibly stamped with the manufacturer's name, brand and tensile strength.

Boilers up to 16 feet in length are made in two courses; boilers 18 and 20 feet long are made in three courses. The longitudinal seams are the butt-strap type—double, triple or quadruple riveted according to size of the boiler—and the riveting and bracing are according to high grade boiler practice.

Rivet holes are drilled small, reamed out full size with all sharp edges and burrs carefully removed before riveting.

Steel tubes, full gauge, of the best American make and tested to 1000 lbs. per sq. in., are used. Both ends of each tube are expanded and beaded over.

The materials are highest grade. The workmanship features the best experience of many years of boiler making.



**The International Return Tubular Boiler
Standard Type Three Course**



THE INTERNATIONAL BOILER WORKS CO.



**The International Return Tubular Boiler
Standard Type Two Course**

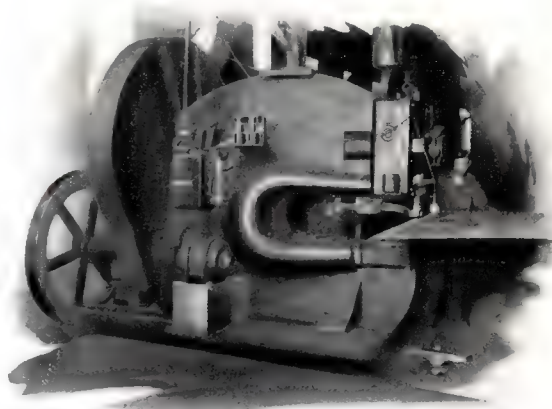
Each boiler has the proper number of cold pressed, steel supporting lugs securely riveted to the shell; or, when so desired, is fitted with pressed steel boiler hangers for support on suspension frame, independent of the side walls.

Each boiler is provided with manholes for cleaning, steam outlet flange, the required pipe openings, fusible plugs, blow-off valve, pressure gauge, water column and gauge cocks. Injector and injector piping are extra.

During the process of construction, each boiler is regularly inspected by a Licensed Inspector of Steam Boilers, tested in his presence to a hydrostatic pressure 50% greater than the working pressure, then stamped according to the A. S. M. E. Code, or the National Board of Boiler & Pressure Vessel Inspectors.

The International Return Tubular Boiler—Standard Horizontal Type—is made in all sizes from 40 to 200 H. P., individual specifications of which will be furnished.

When it is ordered “complete” the following castings are supplied: full flush front (see page 48), dead plate, fire arches, grate bearers, grates (see page 49), rear arch Tee bars, rear arch clean-out door and frame, standard side buck stays, standard rear buck stays, anchor bolts and stack plate, also wall plates and rollers if supporting lugs are used.

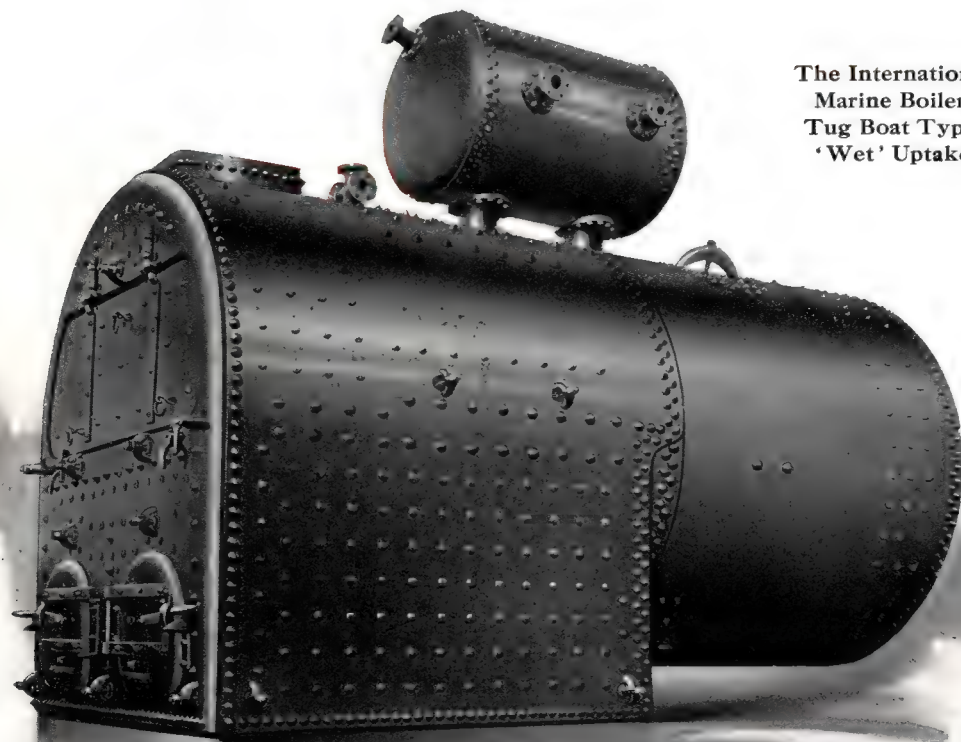


Punching boiler plates



International Marine Boiler

Tug Boat Type



The International
Marine Boiler,
Tug Boat Type,
'Wet' Uptake

The International Marine Boiler—Tug Boat Type—for any working pressure up to 150 lbs., is designed and constructed according to the Rules and Regulations prescribed by the United States Board of Supervising Inspectors of Steam Vessels.

It is of the Water Leg Return Tubular design, compact and economical, with maximum power capacity for the comparatively small space it occupies. The products of combustion pass directly through flues to the

back connection—entirely surrounded by water—then through return tubes into the front connection. This is of two types; either the "wet" uptake or internal, illustrated on this page, or the "dry" uptake or external, illustrated on pages 37 and 38.

Homogeneous, open hearth, marine steel plates, which have been inspected, tested and stamped at the plate mill, are used. All other materials are the best obtainable, the workmanship unsurpassed and the result of many years of experience in building boilers of this type.



THE INTERNATIONAL BOILER WORKS CO.

The International
Marine Boiler,
Tug Boat Type,
'Dry' Uptake
Front View



The International
Marine Boiler,
Tug Boat Type,
'Dry' Uptake
Rear View





Each boiler is complete with steam drum, ash pan sides of steel, ash pans, supporting legs, grates, grate bearers, baffle plates and liners. Sufficient manholes and handholes for proper cleaning and steam flanges are also supplied.

Detailed drawings of the boiler are sent to the U. S. Inspectors of Steam Vessels and approved by them before any work is done on it, since the boiler must conform to the approved drawings in order to pass the U. S. Inspection after it is installed.

During construction, each boiler is regularly inspected by our Shop Inspector and finally

tested in his presence to a hydrostatic pressure 50% greater than the working pressure, then stamped according to the prescribed Rules and Regulations.

Boilers built to Lloyd's Register or to the American Bureau of Shipping Requirements are inspected by their inspector during construction and the final test made in his presence.

The International Marine Boiler—Tug Boat Type—is made in many different sizes and shapes to meet all the variations required by different tug boats.

Prices on application.



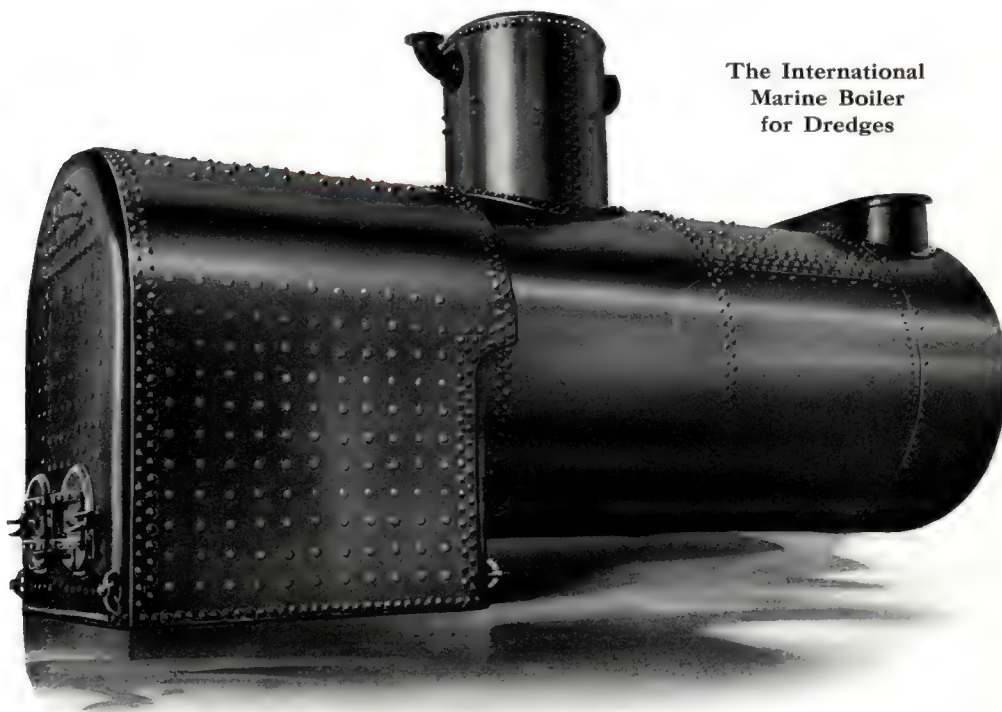
**The International
Marine Boiler,
Tug Boat Type,
'Dry' Uptake**



THE INTERNATIONAL BOILER WORKS CO.

The International Marine Boiler

Locomotive Type for Dredges



The International
Marine Boiler
for Dredges

The International Marine Boiler—Locomotive Type for Dredges—for any working pressure up to 125 lbs., is designed and constructed according to approved boiler practice.

High grade, homogeneous, open hearth, marine steel, which has been inspected, tested and stamped at the plate mill and having a tensile strength of 60,000 lbs. per sq. in., is used in its construction and all fire exposed surfaces are fire box steel.

Each boiler is complete with all castings, necessary fittings and fixtures including manholes, handholes for proper cleaning and the required steam flanges and pipe openings.

Detailed drawings of the boiler are sent to the U. S. Inspectors of Steam Vessels and approved by them before any work is done on it, since the boiler must conform to the approved drawings in order to pass the U. S. Inspection after it is installed.

During construction, each boiler is regularly inspected by our Shop Inspector and finally tested in his presence to a hydrostatic pressure 50% greater than the working pressure, then stamped to the prescribed Rules and Regulations.

Boilers built to Lloyd's Register or to American Bureau of Shipping Requirements, are inspected by their inspector during construction and the final test made in his presence. Prices on application.



The International Donkey Boiler

Scotch Marine Type

The International Donkey Boiler—Scotch Marine Type—for any working pressure up to 150 lbs., is designed and constructed according to the Rules and Regulations prescribed by the United States Supervising Inspectors of Steam Vessels. Also according to the Rules and Regulations of Lloyd's Survey or to the American Bureau of Shipping Requirements.

High grade, marine steel plates which have been inspected, tested and stamped at the plate mill are used. All materials and workmanship are of the highest character, both subject to rigid and regular inspections. The finished boiler embodies the most approved principles of marine boiler practice. This boiler is made either with Morrison Corrugated Suspension Furnaces, Adamson Rings or with plain furnaces as desired. Also with heavy, sheet metal smoke box and uptake with 1" air casing.

Each boiler is fitted with manholes, handholes for proper cleaning, flanged steam outlet, feed and blow-off connections, supporting brackets, furnace front and fire-doors, bridge wall, fire plate and baffle.

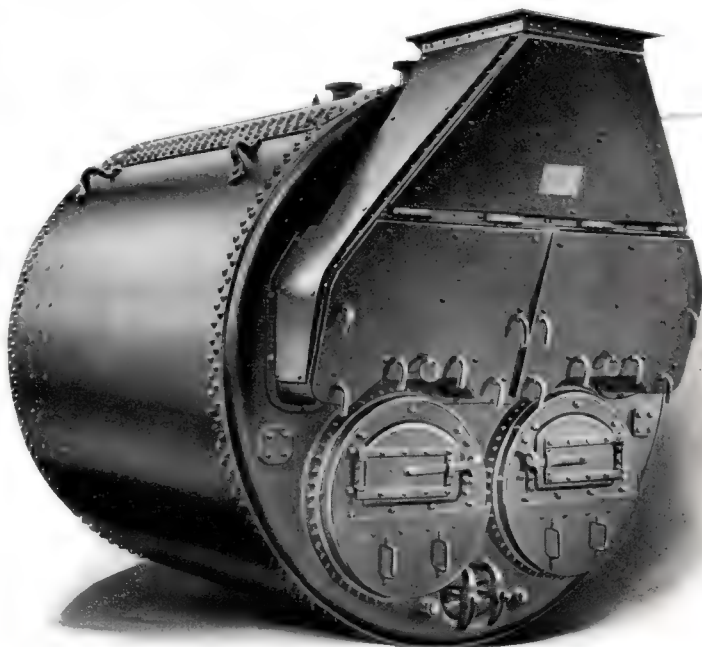
Detailed drawings of the boiler are sent to the U. S. Inspectors of Steam Vessels and approved by them before any work is done on it since the boiler must conform to

the approved drawings in order to pass the U. S. Inspection after it is installed.

All inspections are made by our Shop Inspector. The final hydrostatic test is that of the United States Supervising Inspectors of Steam Vessels, of Lloyd's Survey or of the American Bureau of Shipping Requirements.

The International Donkey Boiler—Scotch Marine Type—is made in a number of different sizes up to ten feet in diameter, and in a wide range of horse power to meet all possible requirements.

It is used particularly on board a steam vessel for furnishing heat and also steam power for steam operated machinery such as winches, hoists, etc., when the vessel is



The International Donkey Boiler, Scotch Marine Type



THE INTERNATIONAL BOILER WORKS CO.

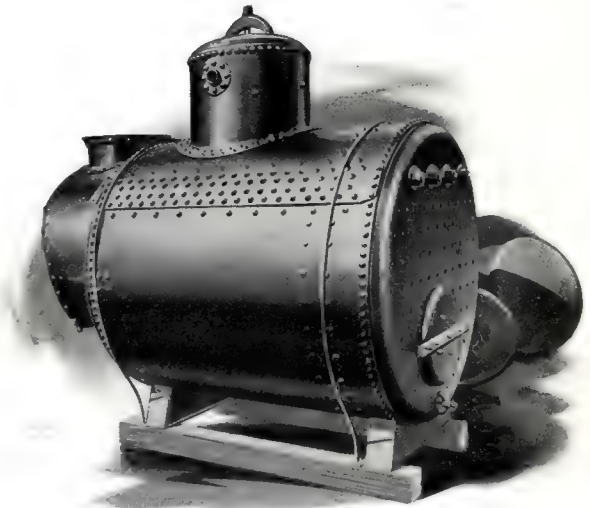


The International Donkey Boiler, Scotch Marine Type, Fitted with Morrison Corrugated Suspension Furnaces

docked, or for emergency purposes should the main boilers become temporarily out of service on account of accident.

This boiler is self-contained, therefore it requires no expensive setting, foundation nor brickwork of any nature whatsoever. It is also very efficiently and easily operated, consequently is adaptable for land service, especially for use around piers and docks where often limited room necessitates the installation of a boiler requiring minimum floor space and height compared with the horse power.

Prices on application.



The International Donkey Boiler secured on skids for export shipment
This particular boiler is one of a large number destined for the Far East



The International Hydro-Pneumatic Tank

The International Hydro Pneumatic Tank is made in a wide range of sizes and capacities.

The shell and heads of this tank are genuine, open hearth, flange steel with a tensile strength of from 55,000 to 65,000 lbs. per sq. in. The heads are made in one piece and die pressed in shape before assembling and conform to a segment of a sphere with a radius approximately equal to the diameter of the shell.

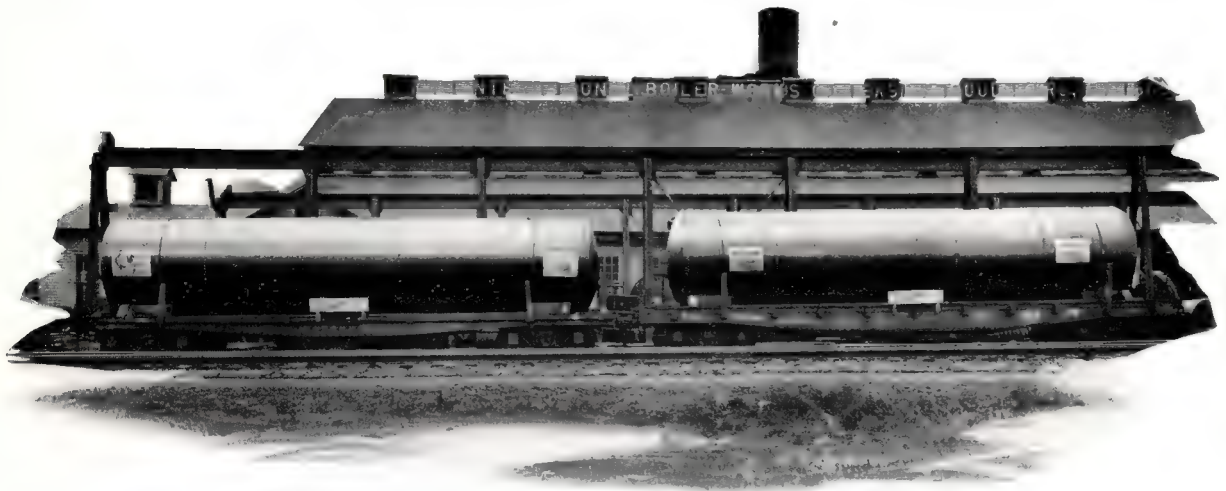
All longitudinal seams are double or triple riveted lap construction or with butt joints according to the diameter and working pressure, and the edges of all plates are machine beveled to facilitate calking and to add to the general appearance of the tank when finished. Rivets are open hearth, soft rivet steel. All rivet holes are punched $\frac{1}{8}$ "

smaller and reamed $\frac{1}{8}$ " larger than the diameter of rivet. Whenever possible, all riveting is done with a hydraulic riveter and the seams are calked on the inside and outside to insure tightness.

Manholes are standard size—11 x 15 inches—with reinforced edges around the opening thus permitting a wide surface for the gasket. Manholes are fitted with double bridges and bolts; and, unless otherwise specified, are placed in the tank head. All pipe flanges are either reinforced or are forged steel.

Each tank is tested to an air and water pressure 50% greater than the working pressure and guaranteed tight before shipment. Each tank is painted with a special, metal preserving paint to resist corrosion.

Prices on application.



The International Hydro - Pneumatic Tank



THE INTERNATIONAL BOILER WORKS CO.



The
International
Hot Water
Tank

The International Hot Water Tank

The International Hot Water Tank is made in any size and for any working pressure.

The shell and heads are open hearth, flange steel with a tensile strength of 60,000 lbs. per sq. in. Standard thicknesses according to size are as follows: shell $5/16$ " and heads $3/8$ ", shell $3/8$ " and heads $7/16$ ", shell $7/16$ " and heads $1/2$ ". Tanks of large diameter are made extra heavy.

The heads are made in one piece and die pressed in shape before assembling and conform to a segment of a sphere with a radius approximately equal to the diameter of the shell.

The longitudinal seams are double riveted, lap joints with edges of all plates machine

beveled to facilitate calking and for appearance. The size and spacing of rivets are in accordance with regular boiler practice.

Manholes are standard size—11 x 15 inches—with reinforced edges around the opening thus permitting a wide surface for the gasket. Manholes are fitted with double bridges and bolts; and, unless otherwise specified, are placed in the tank head.

All pipe flanges are either reinforced or are forged steel.

Each tank is tested to a hydrostatic pressure of at least 200 lbs. per sq. in. and made tight before shipment. The materials and workmanship are fully guaranteed highest grade in every respect.

Prices on application.

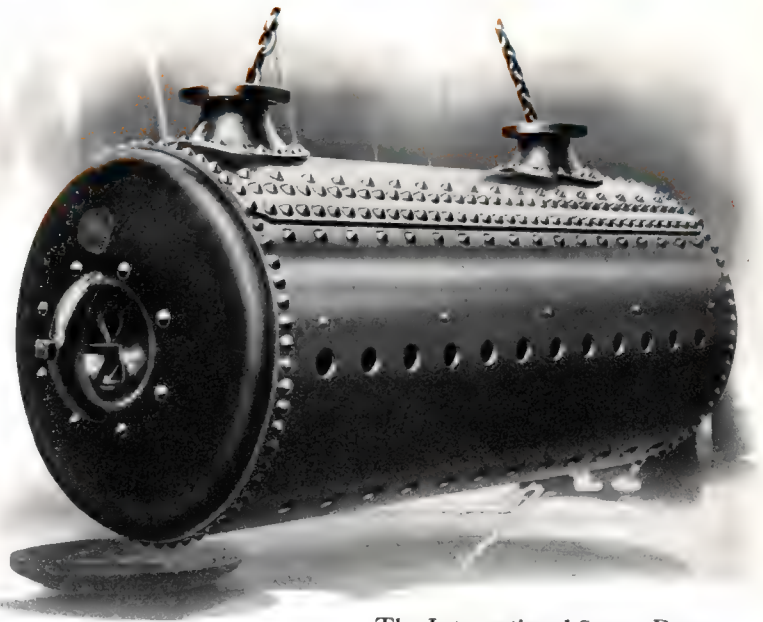


The International Steam Drum

For Water Tube Boilers

The International Steam Drum—for Water Tube Boilers—is made for any working pressure up to 200 lb. per sq. in., and in any diameter or length as required.

Upon receipt of specifications or drawings prices will be quoted.

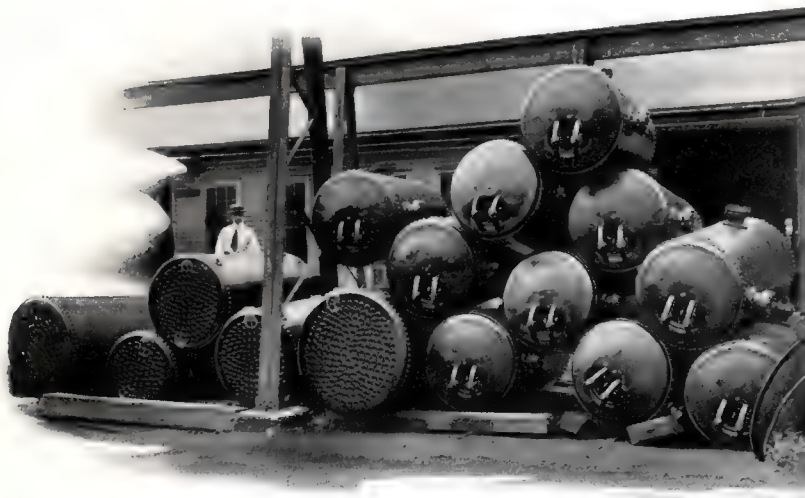


The International Steam Drum
for Water Tube Boilers

The International Air Receiver

The International Air Receiver is made in various sizes and compressor capacities and for any working pressure.

High pressure receivers from 18" to 36" dia. can be made for 250 to 300 lbs. pressure, and sizes 18" to 30" dia. for 350 to 500 lbs. pressure.



The shell and heads are open hearth, flange steel with a tensile strength of from 55,000 to 65,000 lbs. per sq. in. The longitudinal seams are double riveted, lap joints excepting those for the higher pressures. When made according to the State Law requirements, the longitudinal seams are the butt joint type either double or triple riveted according to size and working pressure.



THE INTERNATIONAL BOILER WORKS CO.

The heads are made in one piece and die-pressed to shape before assembling and conform to a spherical segment the radius of which equals the diameter of the shell.

Openings for inlet, discharge and safety valve are ample size and of suitable design for the pressure carried. Manholes are placed in the shell or head of receivers hav-

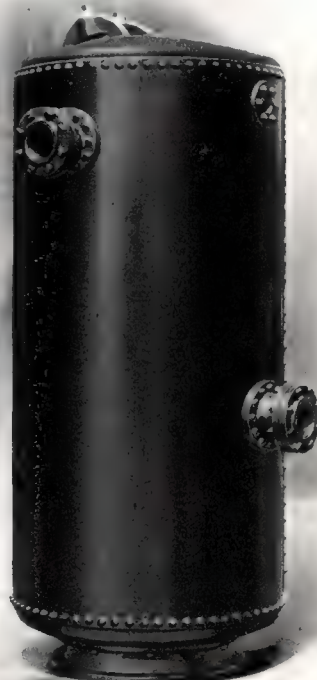
ing double convex heads; but not in those with convex and concave heads unless so specified.

Each International Air Receiver is tested before shipment to a pressure 50% greater than the working pressure. The materials and workmanship are fully guaranteed.

Prices on application.



The International Air Receiver
Class 'A' Type



The International Air Receiver
Class 'C' or Ingersoll - Rand Type



The International Smoke Connection

For One or More Boilers

Unless otherwise specified—for conditions requiring special adaptation—either of the standard type smoke connections illustrated is furnished with International Boilers.

The one has the top opening to receive a round stack and the other has a rectangular end opening for entrance into side of the stack. The latter type is generally used for battery settings of two, three or more boilers and frequently has one or more bends to fit individual conditions.

The International Smoke Connection is made of heavy gauge steel, is both smoke and gas tight, is very stiff, will not sag and is fitted with close-fitting damper plate having operating rods and handles. A clean-out door is conveniently placed.

Any size and type of smoke connection for special requirements will be made on estimate from detail plans and specifications furnished, or our engineers will submit designs from a sketch furnished by the purchaser. Prices on application.



Class 'A'
for 2 Boilers



Class 'B'
for 2 or more Boilers



THE INTERNATIONAL BOILER WORKS CO.

The International Smoke Stack

*Made in our Independent Stack Shop
Fully Equipped with Modern Tools*



The International Smoke Stack is constructed of extra heavy, high grade steel so as to insure proper stiffness and long service.

The gauge of steel generally used is as follows: sizes 12" to 22" diam., No. 14, sizes 24" to 30" diam., No. 12, sizes 32" to 36" diam., No. 10, though lighter or heavier gauges are used if desired. Sufficient steel is always carried in stock so as to enable the construction of smoke stacks up to 36" diameter and at very short notice.

The rivets are spaced not to exceed 3" centre to centre and all joints are properly closed to prevent air leaks.

Each International Smoke Stack is regularly fitted with an effective, close-fitting damper plate and damper rod, guy band and band around the top. Also with steel guy wire four times the length of stack, sufficient clips and thimbles for effective guying.

The photograph here is of the self-supporting steel stack, 72" diam. by 100' high, used in connection with our new power house.

It is of very heavy construction and rests on a special concrete foundation. It is fitted with clean-out door at the flaring base, also with outside inspection ladder extending to the top. A rectangular, heavy steel smoke connection, of suitable capacity for four 150 h. p. boilers, enters near the base.

This stack illustrates only one of many special types which we are prepared to construct from specifications.

Prices of standard or special stacks on application.



The International Boiler Front

*Single and Battery Setting
Full Flush Pattern*

The International Boiler Front—Full Flush Pattern—is designed and constructed for either the single setting or the battery setting of two, three or more boilers.

The design is neat and extremely simple, yet ornamental. It is massive in appearance, heavy, unusually rigid and so constructed as to allow free expansion and contraction without undue strains, thus effectively preventing warping and cracking frequently caused by heat.

The outside surfaces are smoothly finished; and, with either our name or the purchaser's name and trade mark added, this front is unapproached for general effect in the boiler room.



Single Setting



The International Boiler Front is complete with double flue doors, fire doors and liners, ash pit doors and all other necessary castings all properly assembled and carefully fitted before shipment.

Prices on application.

○ ○ ○

Battery Setting
for 2 Boilers

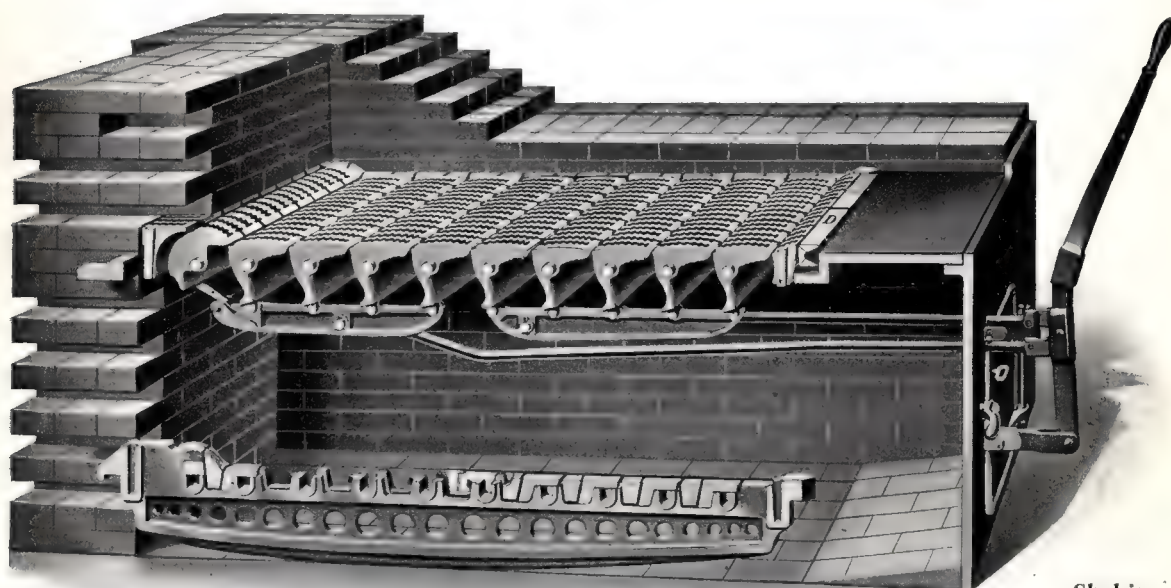


THE INTERNATIONAL BOILER WORKS CO.

Tupper Grates —
generally used
for bituminous
or industrial sizes
of anthracite coal



Culm Grates —
small perforations
to accommodate
fine fuel



**Shaking
and
Dumping
Grates**

The International Grates

The regular 'Tupper' Grates are usually furnished unless Culm Grates are specified.

When desired, the Shaking and Dumping Grates—illustrated here—will be furnished, the price of which will be given on application.

In all instances, the width of grate surface is equal to the diameter of the boiler.

International Firing Tools

These consist of poker, hoe and slice bar and are charged for as an 'extra.'

INTERNATIONAL VERTICAL BOILER—Standard Type. Ratings, Dimensions and Prices.

Number of Boiler	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Horse Power—as rated	4	5	6	8	10	12	15	18	20	25	30	35	40	45	50	60	70	80	90	100	125	150
Diameter of Boiler...in inches	24	24	24	30	30	30	36	36	36	42	42	42	48	48	48	54	54	54	60	60	66	72
Height of Shell.....in feet	4	5	6	5	6	7	6½	7	8	7½	8½	9¼	9½	9½	9½	9	10	11	12¼	13¼	14½	15
Diameter of Furnace...in inches	19	19	19	25	25	25	31	31	31	37	37	37	42	42	42	48	48	48	54	54	60	66
Height of Furnace...in inches	24	24	24	28	28	28	28	28	28	28	28	28	30	30	30	30	30	30	30	30	38	42
Length of Tubes.....in inches	24	36	48	33	45	57	51	57	69	60	72	84	72	78	90	78	90	102	102	114	120	120
Number of Tubes...all 2" diam.	28	28	28	48	48	48	68	68	68	92	92	92	128	128	128	172	172	172	216	216	256	308
Heating Surface.....sq. ft.	40	53	68	84	109	135	171	189	224	265	314	362	434	468	535	623	704	803	1005	1118	1395	1672
Stack.....required diam.	12	12	12	14	14	14	15	15	15	18	18	18	20	20	20	24	24	24	28	28	30	32
Shell Plate.....	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	½	½	½	½	¾	¾	¾	¾	¾	¾
Butt Straps.....	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	½	½	½	¾	¾	¾	¾	¾	¾	¾
Furnace Plate.....	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	¼	½	½	½	¾	¾	¾	¾	¾	¾	¾
Shell Head.....	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Furnace Head.....	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Bare Boiler.....	1,000	1,150	1,300	1,400	1,600	1,800	2,150	2,300	2,600	3,300	3,700	4,100	4,700	5,000	5,500	6,300	6,900	7,400	9,900	10,700	13,300	16,100
Boiler Fixtures.....	400	400	400	550	550	550	850	850	850	1,200	1,200	1,200	1,700	1,700	1,700	2,300	2,300	2,300	2,000	2,000	2,400	2,800
Boiler, Complete, about	1,400	1,550	1,700	1,950	2,150	2,350	3,000	3,150	3,450	4,500	4,900	5,300	6,400	6,700	7,200	8,600	9,200	9,700	11,900	12,700	15,700	18,900
Bare Boiler.....	350	380	414	460	506	560	630	670	750	820	910	980	1,150	1,230	1,334	1,560	1,700	1,900	2,520	2,714	3,240	4,000
Base, Grate and Hood.....	32	32	32	46	46	46	66	66	66	66	92	92	92	140	140	140	180	180	180	270	270	330
Steam Fittings.....	50	50	50	52	52	56	56	56	56	56	60	60	70	72	72	112	112	112	180	180	190	240
Boiler, Complete.....	432	462	496	558	604	662	752	792	872	972	1,062	1,142	1,362	1,442	1,546	1,852	1,992	2,192	2,970	3,164	3,760	4,670
Injector, piped for use.....	40	40	40	50	50	50	70	70	70	70	70	70	90	90	90	120	120	120	180	180	190	190
Crating for Export.....	20	20	20	24	24	24	30	30	30	36	36	36	46	46	46	50	50	50	60	60	70	70

SPECIAL NOTE.

Sizes 21 to 38, inclusive, have a cast iron base.

Sizes 39 to 42, inclusive, have sheet steel hoods, and shell is extended to form base.

For elbows in stack, add the price of 9 feet of stack.

The construction of these boilers is fully described on pages 28 and 29 of this book.

SMOKE STACKS AND ACCESSORIES.—Dimensions and Prices.

Diameter of Stack...in inches	10	12	14	16	18	20	22	24	26	28	30	32	34	36
No. 16 Steel.....per foot	3.50	4.00	4.50	4.70	4.80	5.00	5.20	5.60	6.40	6.60	7.00	7.00	8.00	10.00
No. 14 Steel....." "	4.00	4.50	5.00	5.20	5.40	5.60	5.80	6.20	7.00	7.30	7.70	8.00	9.00	10.00
No. 12 Steel....." "	4.50	5.00	5.50	5.70	6.00	6.20	6.40	6.70	7.00	7.30	7.60	8.00	8.50	10.00
No. 10 Steel....." "	5.00	5.50	6.00	6.20	6.50	6.80	7.00	7.30	8.00	8.60	9.20	10.00	11.00	12.00
No. 8 Steel....." "									8.00	8.60	9.20	11.00	12.00	13.00
Damper in Stack.....	7.00	7.00	9.00	9.00	11.50	11.50	14.00	14.00	17.00	20.00	20.00	23.00	23.00	23.00
Umbrella Top.....	11.00	11.00	13.50	13.50	17.00	17.00	22.00	22.00	27.00	34.00	34.00	40.00	40.00	40.00
Guy Wire.....per foot	.04	.04	.04	.04	.04	.05	.05	.05	.05	.06	.06	.06	.06	.06
Clips.....each	.70	.70	.70	.70	.70	.70	.70	.70	.70	.80	.80	.80	.80	.80
Thimbles.....each	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.30	.30	.30	.30
List Price														

This table concentrates the commercial data (for quick reference) and the technical data in separate divisions.

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